Міністерство освіти і науки, молоді та спорту України
Комісія з екології, охорони навколишнього середовища та збалансованого природокористування науково-методичної ради МОНМС України

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Навчально-наукова серія
“Бібліотека еколога”

Н.І.Черкашина, Є.М.Воронова, Н.В.Максименко

English Bachelors’ course in ecology

Навчальний посібник
Рекомендовано Міністерством освіти і науки України

2-ге видання, перероблене і доповнене

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Навчальний посібник призначено для розвитку навичок читання, перекладу, анотування, реферування аутентичних текстів англійською мовою з історії екології, загальних напрямків екології та природоохоронної діяльності, а також формування знань і вмінь професійного та повсякденного спілкування.

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Передмова

Даний навчальний посібник являє собою університетський курс англійської мови для підготовки бакалаврів зі спеціальності екологія.

Однією з цілей цього посібника є розвиток навичок читання, перекладу, письма, анотування та реферування аутентичних текстів з основних напрямків екології. Інша ціль – це навчання як професійному, так і побутовому спілкуванню англійською мовою, чого вимагає програма з англійської мови для немовних вузів та кредитно-модульна система навчання. Велика увага приділяється розвитку мислення студентів на основі різноманітних лексико-граматичних вправ, а також завдань на виконання спонтанних та довгострокових проектів за всіма темами, які вивчаються в навчальному посібнику. В посібнику значна увага приділяється розвитку та поширенню лінгвокраїнознавчих знань, що пов'язано з цілями, визначеними Болонською декларацією, а саме розвитком співробітництва між європейськими вищими навчальними закладами та мобільністю студентів.

Структура посібника. Навчальний посібник складається з восьми модулів, побудованих згідно вимог Рекомендацій Ради Європи стосовно вивчення, викладання та оцінювання знання іноземних мов. Всі модулі навчального посібника пов'язані між собою та побудовані за принципом наростання граматичних, лексичних та мовних труднощів. Кожний модуль містить постановку задачі та мету вивчення відповідного лексико-граматичного матеріалу.

Навчальний посібник складається з трьох взаємопов'язаних частин. Перша частина містить основний лексико-граматичний матеріал восьми модулів та матеріал для розвитку професійного та побутового спілкування англійською мовою, тест-контроль, а також завдання для виконання проектної роботи. Друга частина – додатковий матеріал для самостійної роботи країнознавчого та наукового характеру. Третя частина – додаток, який містить українсько-англійський екологічний словник, таблицю неправильних дієслів, таблицю формул та хімічних елементів англійською мовою.

Навчальний посібник розраховано на 144 години аудиторної та 144 години самостійної роботи студентів.

Перша, основна модульна частина, складається з 8 модулів (16 Units) за такими напрямками екології як:

1. Ecology
2. Environmental Damage through History
3. Pollution
4. Air Pollution
5. Water
6. Soil
7. Energy
8. Acid Deposition

9. Greenhouse Effect
10. Global warming
11. Desertification

Ці розділи базуються тільки на аутентичному матеріалі та являють собою курс екології англійською мовою для розвитку навичок читання, перекладу, реферування, анотування, професійного спілкування, передбаченого програмою. До модулів входить матеріал повсякденного спілкування, який містить інтенсивний курс англійської мови за наступними темами:

1. Hello
2. Good-bye
3. Thank you
4. Excuse me
5. Weather
6. Asking the way
7. Invitation
8. Appearance
9. Telephoning
10. Hotel
11. University life
12. Media in our life

Кожний модуль закінчується тест-контролем, який містить лексичний, граматичний матеріал вивченої теми, а також відповідний матеріал професійного та побутового спілкування.

Другий розділ містить тексти для додаткового читання, які є матеріалом для самостійної роботи та відповідають темам основних розділів і одночасно є матеріалом науково-популярного, газетного, літературно-художнього жанрів. В цьому розділі також є рубрика «Вони зробили великий внесок у розвиток екології як науки» (They contributed much into the development of ecology). Тут представлено науково-популярний матеріал з життя великих вчених, які зробили внесок у розвиток екології. Ці тексти є основою для складання доповідей, рольових ігор та проектних завдань, вони підвищують мотивацію навчання, стимулюють пізнавальний та професійний інтерес майбутніх екологів, передбачають індивідуальне навчання. Тексти до всіх модулів навчального посібника добиралися відповідно до задач навчання та виховання, які стоять перед предметом «іноземна мова», а також із урахуванням вікових особливостей та інтелектуального рівня студентів. Всі тексти несуть лінгвокраїнознавчу інформацію за спеціальностями «екологія» та «екологія в природоохоронній діяльності». Основними критеріями відбору матеріалів посібника є інформативність, пізнавальність, науковий інтерес. Мовні моделі, що існують, сприяють розвитку навичок діалогічного, полілогічного та монологічного мовлення. В кожному розділі навчального

посібника представлено ілюстрований матеріал у вигляді схем, малюнків, діаграм, які також сприяють вербальній активності.

Даний навчальний посібник є результатом багаторічної співпраці двох університетів – Харківського національного університету ім. В.Н. Каразіна та Харківського національного автомобільно-дорожнього університету і співпраці авторів даного посібника – викладачів англійської мови.

Автори сподіваються, що навчальний посібник буде цікавим та корисним для факультетів, відділень, університетів, інститутів, академій, де є спеціальність екологія.

PART I

MODULE I
THE ORIGIN OF ECOLOGY

CURRICULUM MATERIALS FOR MODULE 1
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 1

Предмет, цілі, мета навчальної дисципліни «англійська мова професійного спрямування».
Тема 1. Фонетика та граматика: Увідно-фонетичний курс. Артиклі. Прийменники. Займенники. Іменник та його категорії. Утворення множини іменників. Присвійний відмінок. Порядок слів у реченні.Запитальні слова. Типи питальних речень.Present tenses (Simple ,Continuous, Perfect, Perfect Continous).
Тема 2. Аналітичне читання: тексти за фахом з базових підручників.
Тема 3. Усна практика: Meeting. Getting acquainted.Моя родина. Мій робочий день. Мій університет. Реферування аутентичних текстів за фахом.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольні роботи за матеріалами модулю 1 (зразки).

У результаті вивчення модуля 1 студент повинен
знати:
правила англійської фонетики; граматичний матеріал: Артиклі. Прийменники. Займенники. Іменник та його категорії. Утворення множини іменників. Присвійний відмінок. Порядок слів у реченні.Запитальні слова. Типи питальних речень.Present tenses (Simple ,Continuous, Perfect, Perfect Continuous).

вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 1
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 1

1.1Unit 1 Ecology

The Earth has enough for every man's need, but not for man's greed.

(Ganlui)

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. annual (adj) – річний, щорічн
2. appear (v) – з'являтися
3. breathe (v) – дихати, вдихати
breath (n) – дихання
4. by-product (n) – побічний продукт
5. consumption (n) – споживання
6. contribution (n) – внесок
7. decrease (v) – зменшувати
8. disappear (v) – зникати
9. distribution (n) – розповсюдження, розподіл
10.environment (n) – навколишнє середовище
11.exhaust (v) – виснажувати
12.fuel (n) – пальне
13.harm (v) – шкодити
harm (n) – шкода
14.heat (v) – опалювати
15.increase (v) – збільшувати
16.influence (on, upon) (v) – впливати
17.involve (v) – залучати, порушувати
18.moisture (n) – вологість, сирість, волога
19.nutrient (n) – їжа, поживні речовини
20.poison (n) – отрута
poison (v) – отруювати
21.pollution (n) – забруднення
pollute (v) – забруднювати

22.predict (v) – пророкувати
23.soot (n) – кіпоть
24.sustain (v) – підтримувати
25.wastes (n) – відходи

II. Vocabulary check.

Activity 1. Give English equivalents of the following.

1. біологічне та фізичне навколишнє середовище
2. співвідношення між організмами
3. непов'язані науки
4. збільшення рослинності
5. адаптація організмів
6. повітря, яким ми дихаємо
7. негативний влив
8. речовини, що отруюють
9. порушувати баланс
10. проблеми, які стоять перед нами
11. скорочення споживання

Activity 2. Match the following words with their explanations.

to face	strong desire of more
to exceed	a measurement of the speed at which smth happens
to sustain	to support
consumption	recognize the existence of
rate	to be greater than
to imply	using up
contribution	to make less or smaller
steaming	to give or to have a meaning of
to reduce	serving as nourishment
nutrients	release surplus energy
greed	act of contribution

III. Grammar review

Порядок слів у реченні.

Будь-яка мова складається з окремих слів і граматичних механізмів, які показують як складати ці слова у великі значущі словосполучення. Кожне слово має свій зміст, але слова не пов'язані одне з іншим якимось особливим способом. *To make a mistake is only human* має зовсім інше значення; слова поєднані у змістовному словосполученні, у речення.

Англійська мова має декілька механізмів для складання слів у речення. Одним з найважливіших є порядок слів у реченні.

В англійській мові граматичне значення у великій мірі визначається порядком слів у реченні. *Blue sky* and *sky blue* означають різне: у першому випадку, *blue* описує небо; у другому, *sky* описує *blue.*

Можна побачити цей принцип, як він працює на прикладах:

e. g. The hunter injured the wolf. Мисливець поранив вовка.

The wolf injured the hunter. Вовк поранив мисливця.

My old friend bought a new car. Мій старий приятель купив нову машину.

My new friend bought an old car. Мій новий приятель купив стару машину.

Порядок слів у розповідному реченні.

0 Обставина часу	**1 підмет**	**2 присудок (іменникова частина)**	**3 додаток**	**4 обставини способу дії**	**5 Обставини місця**	**6 Обставини часу**
When?	Who? Which? What?	Action	Who? Which? What?	How?	Where?	When ?
Last week	I	went			to the theatre	
	I	had	a very good seat.			
	The play	was	very interest-ing.			
	I	did not enjoy	It.			
	A young	were sitting			behind me.	

	man and a young woman					
	They	were talking		loudly.		

(1) Дієслово + додаток

Дієслово та доповнення до нього звичайно стоять разом, інші слова не ставляться між ними:

	Дієслово	+	**додаток**
I	like		children very much.
Did you	see		Norman yesterday?
Ann often	plays		tennis.

(2) Місце та час

Ми вказуємо місце (де?) перед часом (коли? як часто? як довго?)

	Місце	**Час**
Tom walks	to work	every morning.
She has been	in Canada	since April.
We arrived	at the airport	early.

Часто можливо ставити обставини часу на початку речення:

e.g. On Monday I'm going to Paris.

Every morning Tom walks to work.

***Примітка*:** На початку речення не можна ставити слова *early* або *late*.

(3) Прислівники з дієсловом

Деякі прислівники (наприклад, *always, also, almost, hardly, often, probably)* ставляться з дієсловом у середині речення:

e.g. Tom always goes to work by car.

We were feeling very tired. We were also hungry.

(a) Якщо дієслово –одне слово (goes, cooked), тоді прислівник ставимо перед дієсловом :

	Прислівник	**Дієслово**	
Tom	always	goes	to work by car.

Exercise 1.

Arrange the words correctly in the seven columns.

1. Major gases because activities human concentrations atmospheric of long-lived greenhouse increasing are of.

2. Account for power stations per cent 34 emissions current of dioxide carbon.
3. UK are currently emissions carbon dioxide of are around 2.7 per cent total global of from combustion fuel fossil.
4. Why increasing is greenhouse of concentration gases?
5. A tree in the corner of the garden he planted.
6. UK is stable emission carbon of dioxide in?
7. There a lot of people are at the bus-stop.
8. What to lead will global warming?
9. Is covered Earth's by surface the rock of called thin crust layer a.
10. Above sea Rocky level crust islands forms and continents.

Запитальні слова.

Люди	**Речі /тварини**	**Місце**	**Час**	**Кількість**	**Спосіб**	**Причина**
Who	What	Where	How long	How many	How	Why
Whose (possession)	Which (of)		How often	How much		
Which (of)			What time			
What			when			

Типи питальних речень

1. загальні питання	Do you work? Is she reading?	Yes, I do. No, I don't. Yes, she is.
2.спеціальні питання	Where do you live? What are you doing? Who saw the Venus?	I live in Kharkiv. I am reading a special text. He did.
3.розділові питання	Ecology is an important science, isn't it? We can't stop polluting our cities, can we?	Yes, it is. Yes, we can.
4. альтернативні питання	Is this a liquid or a solid substance?	This is solid.

Exercise 2. Fill in question words.

1. ... discovered penicillin?

2. …calories do you consume every day? "About 1,800."
3. …do you go to the gym? "About once a week".
4. …is your favourite colour?
5. …are you going on holiday this year?
6. …is the fastest way to get to Poltava from here?
7. …do you leave home in the morning?
8. …didn't you call me earlier?
9. …your lessons start?
10.…weather forecast for tomorrow?

Present Simple vs Present Continuous

Present Simple:

I/ you/ we they work Do I / you/ we/ they work?
He/ she/ it works Does he / she/ it work?
I/ you/ we/ they/ do not work.
He/ she/ it does not work.

Present Continuous (Progressive) Tense:

I am working Am I working?
You/ we/ they are working Are you/ we/ they working?
He/ she/ it is working Is he/ she/ it working?
I am not working
You/ we/ they are not working.
He/ she/ it is not working.

Вживання:

Present Simple	**Present Continuous**
1.постійна, звичайна дія або дія, яка властива особі чи предмету, який позначає підмет. e.g. She works in a bank. Загальні положення безвідносно до часу e.g. The sun rises in the east.	1. тимчасові ситуації e.g. He is spending the week with his students. 2.ситуації, що змінюються чи розвиваються e.g. She is getting more and more impatient.
2. дії, які постійно повторюються (особливо з прислівниками неозначеного часу) e.g. He always goes to bed at 11 o'clock.	3. дії, які часто повторюються із словами *always, constantly, continually*, які виражають роздратування або критику e.g. He's always getting into trouble.
3. для вираження майбутньої дії в підрядних реченнях умови й часу, які вводяться сполучниками when-коли, if –якщо, after- після, till,until – поки не, before – перш ніж. e.g. He will do the test if he has all the necessary equipment. 4. розклад руху поїздів, програм e.g. The train leaves at 8.00.	4. дія збігається з моментом мовлення або близько до нього e.g. The sun is shining now. He is doing his course paper. 5. заплановані дії у близькому майбутньому e.g. I'm going to the theatre this evening.
6. часто вживається з словосполученнями : every day/week/month/year, usually, sometimes, always, rarely, never, often, in the morning/evening/afternoon, at night, on Mondays, etc.	6. часто вживається з виразами: now, at the moment, at present, nowadays, today, tonight, always, still, etc.

У Present Continuous не вживаються дієслова feel, hear, see, smell, taste, adore, detest, dislike, enjoy, forgive, hate, like, agree, believe, suppose, understand, belong, concern, depend, know, mean, own, possess, need, prefer, want.

Exercise 3.
Complete the sentences using the correct form of the verbs in brackets:

1. The earth (to go) round the sun.
2. South America (to be) rich in laterite soils .
3. World population (to reach) critical levels.
4. The environmental crisis we are facing today (to destroy) even a tiny corner of the earth.

5. If we (not take) action soon, the environmental crisis may cause irreversible damage to the entire planet.
6. There (to be) two important differences between ancient civilization and the world today.
7. Since the soil is porous, it (subject) to leaching.
8. Government (to have) an impact on the population growth.
9. Many people prefer a small car now because it (to be) economical to operate and it (to conserve) energy.
10. Animal fat (contain) cholesterol.

Exercise 4.

The following sentences all refer to the present. Put the verbs in brackets into the correct tense, Continuous or Simple Present:

1. You (see) the house on the corner? That is where I was born.
2. You (listen) to what I am saying? You (understand) me?
3. I (notice) the weather (to change) now.
4. She (not understand) what you mean.
5. A lemon (not contain) much sodium.
6. California (to be) a large state with large population.
7. It still (rain), but it (look) as if it will soon stop.
8. Ask him what he (want).
9. Japanese people (not to consume) a lot of fat, but Americans (to do).
10. You (to think) fruit juice (to be) nutritious?

Exercise 5.

Fill in the blank spaces of the following proverbs and sayings:

1. Actions …… louder than words (to speak).
2. Still tongue …… a wise head (to make).
3. Birds of a feather …… together (to flock).
4. A watched pot never ……(to boil).
5. All work and no play ……Jack a dull boy (to make).

Exercise 6.
Translate into English. Mind the correct use of tense forms.

1. Здорова їжа стає все популярнішою у світі.
2. Проблеми навколишнього середовища дуже важливі для майбутнього всього людства.
3. Видобуток нафти скорочується , бо її запаси вичерпуються.
4. Молоді люди повинні дбати про збереження лісів, бо вони є легенями нашої планети.
5. У Китаї з кожним роком зростає виробництво автомобілів, які забруднюють атмосферу.
6. Вчені стривожені тим фактом, що льодовики на полюсах швидко зменшуються.
7. Велосипед – найекологічніший вид транспорту.
8. Нестача води у світі може бути причиною нових війн.
9. Екологічна катастрофа Чорнобиля вивела великі площі орної землі з сільськогосподарського використання.
10. Вчені працюють над одержанням пального з пальмової олії.

IV Pre-text discussion
Activity 1. Do you know that:

- Modern ecology began with Charles Darwin
- Chief Seattle in his speech at a tribal meeting in 1854 said: “Every part of this earth is sacred. Every shining pine needle, every mist in the dark woods, every humming insect is holy in the memory and experience of people”
- Ecologists have developed the declaration of Interdependence – awareness of everything in the world being interdependent and to save the planet from the ecological crises
- Our home, planet earth is finite: all life shares its resources and its energy from sun and therefore has limits to growth
- “Greenpeace” started functioning in 1971
- Nowadays there are many pressure and interesting groups in many countries, trying to find solutions to the problems of pollution

Activity 2. Make up dialogues of your own, discussing the information given in the part “Do you know that”.

Activity 3. Give your opinion on the following

1. The term “ecology” appeared together with the industrial revolution of the 19th century.
2. Motor-transport influences both positively and negatively on the big cities’ environment.
3. Poisoned substances pollute everything around a man: air, land, water, plants, animals and harms his life.

V. Read, translate text 1A.

Text 1A.

“Ecology”

Ecology is a very popular word today. But what does it mean? Ecology is a science which studies the relationship between all forms of life on our planet and the environment.

The physical environment includes light and heat or solar radiation, moisture, wind, oxygen, carbon dioxide, nutrients in soil, water, and atmosphere. The biological environment includes organisms of the same kind as well as other plants and animals. Because of the diverse approaches required to study organisms in their environment, ecology draws upon such fields as climatology, hydrology, oceanography, physics, chemistry, geology, and soil analysis. To study the relationships between organisms, ecology also involves such disparate sciences as animal behaviour, taxonomy, physiology, and mathematics.

The term ecology was introduced by the German biologist Ernst Heinrich Haeckel in 1866; it is derived from the Greek oikos ("house"), sharing the same root word as economics. Thus, the term implies the study of the economy of nature. Modern ecology, in part, began with Charles Darwin. In developing his theory of evolution, Darwin stressed the adaptation of organisms to their environment through natural selection. Also making important contributions were plant geographers, such as Alexander von Humboldt, who were deeply interested in the "how" and "why" of vegetation distribution around the world.

The idea of "oikos" "home" includes the whole planet of ours, it's population, the Nature, animals, birds, fish, insects, all other living beings and even the atmosphere around our planet.

Since ancient times Nature has served Man. It gives everything he needs: air to breathe, food to eat, water to drink, wood for building and fuel for heating his home. For thousands of years people lived in harmony with the environment and it seemed to them that the resources of nature had no end or limit. With the industrial revolution our negative influence on Nature began to increase. Large cities with thousands of steaming, polluting plants and factories can be found nowadays all over the world. The by-products of their activity are polluting the air we breathe, the water we drink, the fields where our crops are grown. That’s why those who live in cities prefer spending their days off and their holidays far from the noise of

the city, to be closer to nature. Perhaps they like to breathe fresh air or to swim in clear water because the ecology there is not so poor as in the cities.

So, pollution is one of the most burning problems nowadays. Now millions of chimneys, cars, buses, trucks all over the world are exhausting fumes and harmful substances into the atmosphere. These poisoned substances are polluting everything: air, land, water, birds and animals. So, it is usually hard to breathe in large cities where there aren't lots of plants. Soot and dirt cover everything there. All these things have a harmful effect on the environment and human health. Every year the atmosphere is polluted by about 1000 tons of industrial dust and other harmful substances. Big cities suffer from smog. Cars with their engines have become the main source of pollution in industrial countries. Vast forests are being cut down for the need of industries in Europe and the USA. The loss of the forests upsets the oxygen balance of the new wastelands. As the result some species of animals, birds, fish and plants have disappeared and keep disappearing.

Water pollution is very serious, too. Ugly rivers of dirty water polluted with factory wastes, poisoned fish all round us. Polluted air and poisoned water lead to the end of the civilization. Nowadays a lot of dead lands and lifeless areas have appeared. So our human activity can turn the land to a desert.

Scientists now predict that by the year 2050 the population will double. The fact is that the rate of food production falls behind population growth in many developing countries. The annual fish catch already exceeds what the world's oceans can successfully sustain. If we go on using our natural resources at today's rates, we will have used up the entire reserves of copper, natural gas and oil till the year 2054.

But the problem ahead lies not so much in what we use but in what we waste. We face not only a resource crisis but a pollution crisis as well. The only solution is to try to change the areas of consumption, technology and population. Changes in technology must be taken by slower population growth which can be achieved by education. And there is little hope of reducing consumption over the next half century.

VI. Comprehension check

Activity 1. Do the false/true activity

1. The term ecology was introduced in ancient times by a Greek philosopher.
2. Modern ecology starts with the Darvin's theory of evolution.
3. Ancient people lived in harmony with nature and they thought that the resources of nature were unlimited.
4. The by-products of today's man activity don't harm the nature seriously.
5. Pollution is one of the most burning problems nowadays.
6. The rate of food-production is rather high and will be enough for coming generations.
7. Cars have become the main source of pollution in industrial countries.

8. We will use up half of all copper reserves in 50 years.
9. Soon we'll face not only a resource crisis but a pollution crisis as well.
10. With the industrial revolution started the era of positive influence on Nature.

Activity 2. Look through text 1A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Chimneys, vehicles exhaust harmful _____.
2. Many species of animal and birds have disappeared and _____.
3. _____ for the need of industries all over the world.
4. Human activities can turn _____.
5. Ecology draws upon such fields of science as _____.
6. _____ solar radiation, wind, oxygen, water and so on.
7. _____ relationship between all forms of life and the environment.
8. _____ as climatology, hydrology, chemistry, soil analysis.
9. _____ the adaptation of organisms to their environment.
10. Ecology implies _____.

VII. Discussion
Activity 1. Define the logical parts of text 1A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on the text 1A.
Activity 3. Translate in writing and reproduce.

- Добрий день.
- Добрий день.
- Я давно тебе не бачила. Чим ти займаєшся?
- Я навчаюся в університеті.
- На якому факультеті?
- На екологічному.
- Яка твоя майбутня професія?
- Я буду екологом.

***

- Добрий вечір.
- Добрий вечір.
- Що ти читаєш?
- Я читаю статтю про Чарльза Дарвіна.
- Ти навчаєшся на біологічному факультеті?
- Ні, на екологічному, але я цікавлюсь Ч.Дарвіном як основоположником сучасної екології.

***

- Дайте відповідь на запитання, будь ласка. Що таке екологія?
- Екологія – це наука, яка вивчає відношення між формами життя та навколишнім середовищем.

- З яких наук екологія черпає дані?
- Екологія бере дані з кліматології, гідрології, океанології та ін.
- Цілком правильно. А з якого вчення бере початок сучасна екологія?
- З теорії еволюції Ч.Дарвіна.

***

- Привіт! Куди ти поспішаєш?
- Я поспішаю на лекцію про забруднення навколишнього середовища.
- Як цікаво! Я теж цікавлюсь цією проблемою.
- А чим саме?
- Я працюю над джерелами забруднення.
- Ти маєш на увазі автотранспорт, промислові підприємства, чи не так?
- Так, це найбільш серйозні джерела забруднення. Вони особливо шкідливі для тих, хто живе у великих містах.
- Можна я піду на лекцію з тобою?
- Звичайно.

***

- Лекція була дуже цікавою.
- Так. Я навіть і не знала, що забруднення навколишнього середовища бере початок з давніх часів (ancient times).
- І воно продовжується до сьогоднішнього дня.
- Я дуже хвилююся за наше і за майбутні покоління (generations).
- Саме тому я досліджую проблему забруднення навколишнього середовища.
- Я згодна з тобою (I agree with you), треба боротися з забрудненням повітря, води, землі, щоб бути здоровими.
- Повністю розділяю твою точку зору (I share…).

Activity 4. Make up your own dialogues on the theme "Ecology".

VIII. Skim text 1B and get ready to speak about the most important pressure and interesting groups protecting the environment.

Text 1B.

The problems and prospects of the blue planet interest not only scientists and futurologists, but also politicians, industry, public – and above all, young people. There is hardly a young person who is not concerned with the preservation of our natural habitat. To recognize environmental problems and master them, to reduce and avoid environmental pollution, to discover and develop ecologically sound technologies – these are the essential building blocks of our future.

Whether scientists or politicians, bankers or students, whether Greeks, Norwegians, Hungarians or Finns … all are encouraged to make a contribution towards protecting the environment. Dedication and courage to change one's way of thinking are called for.

We are to stop pollution. For example, in 1989 in Australia, Sydney, the Greenpeace started urgent campaigns in order to preserve environment. In a year the same kind of action was held all over Australia and it was called "Clean up Australia". The following years 110 countries held the similar actions within the ecological program of the UNO.

Nowadays there are many different pressure and interests groups in many counties, which are trying to find solutions to the problems of pollution at the national and international level. They are groups of people with common interest in trying to draw the public attention to environmental problems, to influence the government decisions.

Greenpeace is a very famous pressure group. It started functioning in 1971. Its headquarters are in Amsterdam, but it operates in 25 countries worldwide. The aim of Greenpeace is to protect wildlife from toxic wastes, nuclear tests.

"Friends of the Earth" (FoE) is one of the British pressure groups with an international reputation. Its general aim is to conserve the planet's resources and reduce pollution. FoE was established in 1971 and now it operates in 44 countries worldwide. The campaigning issues of the FoE are:

- protection of all animals and plants in danger of extinction.
- end of the destruction of wildlife and habitats.
- a program of energy conservation measures, etc.

So, a number of campaigns resulted in:

- the ban on hunting in England and Wales
- an indefinite delay in the construction of the Commercial East Breeder Reactor, etc.

But not only Greenpeace groups can influence the problem of pollution. Different people have their own opinions on this problem:

- The continued pollution of the earth, if unchecked, will eventually destroy the fitness of this planet as a place for human life. (B. Commoner).
- The Earth has enough for every man's need, but not for man's greed. (Ganlui).

And I agree with them because it is really so. Some terrible examples prove this fact.

The Baltic Sea is a special case. Because it is such a small sea and it becomes dirty very easily. Its water changes slowly through the shallow straits. As many as 250 rivers run into the Baltic. There are hundreds of factories in these rivers and millions of people live along them. Quite a lot of big cities lie on its coast. All these combined with the active navigation of the sea naturally affect the state of the sea water and the shore line flora and fauna. People suffer from water pollution; deaths from cancer increase people's concern. And there is no escape from this ecological crisis without organizing a single body dealing with the environmental problems, developing and carrying out a nationwide program of environmental protection and cooperating with international schemes.

Summary writing.
Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. 110 countries held action within the ecological program of the UNO.
2. "Friends of the Earth" (FoE) is one of the British pressure groups with an international reputation.
3. About 250 rivers run into the Baltic.
4. Greenpeace is aimed to protect wildlife from toxic wastes.
5. The essential building blocks for our future are to recognize environmental problems, to master them, to reduce environmental problems.
6. The Baltic Sea is a special case and it becomes dirty very easily.
7. Death from cancer increases people's concern.
8. There are groups of people with a common interest in trying to draw the public attention to environmental problems.
9. The problems and prospects of the blue planet interest both scientists and futurologists.
10. The Earth has enough for every man's need, but not for man's greed.

Activity 2. Translate into English using the dictionary.

Термін *екологія* в наш час став широко відомим і загальновживаним. На початку століття його знали лише вчені - біологи, а в 60-х роках XX століття, коли розвинулася глобальна екологічна криза як криза у відносинах людини з середовищем існування, виник екологічний рух, що набуває все більшого розмаху.

Е.Геккель терміном екологія визначив біологічну науку, що вивчає взаємовідносини організмів з оточуючим їх середовищем.

Екологія, постійно збільшуючи набір факторів зовнішнього середовища, вивчає їх вплив на особини, популяції, на людину. Звідси – прямий зв'язок екології з господарською діяльністю людини, особливо з такими масштабними виробництвами, як енергетика, паливо-та ресурсовидобувні комплекси, хімія, транспорт, лісове та сільське господарство тощо.

Екологія є базою співпраці фахівців усіх напрямів: натуралістів та інженерів , експериментаторів та вчених –теоретиків, біологів, медиків, метеорологів, для котрих екологічні знання є життєво необхідними. Набуття кожною людиною екологічних знань буде сприяти дбайливому ставленню до природи, збереженню її, зменшенню кількості й сили ударів з боку природи у відповідь на бездумне ставлення людини до неї.

IX. Long-term project work.

Prepare projects on the following topics.

1. Why I study ecology.
2. Ecological situation in Ukraine.
3. Ecological movement in Ukraine.
4. Influence of today's by-products of man's activity on his lifestyle.

X. Spoken English (Every day English)

1. Remember!

Існує багато варіантів привітань, але вибір кожного з них залежить від того, з ким ви вітаєтесь. В українській мові – так само: своєму викладачу чи керівнику ми не скажемо: "Привіт!", хоч таке привітання буде природнім на адресу друзів та близьких родичів.

Заповніть таблицю привітань в залежності від ситуацій

Привітання: Good day. Good evening. Evening. Good morning. Good afternoon. Afternoon. How are you doing? Hi. Hello. How do you do?

Малознайома людина, керівник, викладач, офіційна особа	Родичі, близькі друзі, товариші

Деякі привітання як в українській, так і в англійській мовах можна використовувати при розставанні. Так само, як на прощання ми можемо сказати "Привіт!", англійською можна сказати "Good evening", "Good morning", "Good afternoon".

Зазвичай у тому випадку, коли ви вітаєтесь з близькими людьми, однієї фрази привітання буває недостатньо. Як правило, за нею йде слідом етикетна репліка типу **How are you**, **How are you getting on,** і т.д. Усі вони приблизно означають: "Як справи". Але не потрібно на це питання давати докладну відповідь, особливо у тому випадку, коли справи йдуть не досить добре. Перш за все потрібно відповісти так само коротко:

"I'm fine, thanks" (Добре, дякую) або "Not too good" (Не дуже добре)

Якщо не має гострої необхідності поділитися своїми проблемами, краще у будь-якому настрої дати оптимістичну відповідь. Але на цьому церемонія привітання не закінчується. Якщо вас запитали про справи, значить і ви маєте поцікавитися, чи все добре у вашого співрозмовника:

"How are you" (Як ти?) або "And you" (А ти?)

Часто після привітання йдуть дві етикетні фрази, перша з котрих передає задоволення від зустрічі.

2. Speech patterns.

Hello! Meeting, Getting acquainted.

Good morning!	Доброго ранку!
Good afternoon!	Доброго дня!
Good evening!	Доброго вечора!
Hello!	Привіт!
Hello, everybody!	Привіт, усім!
Hi!	Привіт!
How do you do!	Здоровенькі були!
Good night!	На добраніч!
How are you?	Як ви?
How are you getting on?	Як справи?
How is your family getting on?	Як сім'я?
How are things with you? (your sister, parents)	Як у тебе справи? (у твоєї сестри, у батьків)
How's life?	Як життя?
How are you doing?	Як ся маєте?
How have you been?	Як ся маєте?
How's life treating you?	Як ся маєте?
How are you this morning?	Як справи йдуть з ранку?
How about you?	А як у Вас?
I'm fine, thank you.	Чудово, дякую.
Not too bad, thank you.	Непогано, дякую.
Not too good.	Не дуже добре.
It is great! Thank you.	Прекрасно! Дякую.
Nothing to complain about.	Нема на що скаржитися.
Nothing to boast of.	Нічим хвалитися
Life is going its usual way.	Життя йде своїм шляхом.
Nothing new, same old things.	Нічого нового, усе як і раніше

to introduce, to allow, to acquaint, to meet, to get acquainted, to be acquainted, an acquaintance.

Let me introduce myself	Дозвольте відрекомендуватися.
Let me introduce my friend to you	Дозвольте відрекомендувати Вам мого друга.
Let me introduce you to my aunt	Дозвольте відрекомендувати Вас моїй тітці
Allow me to acquaint you with my assistant	Дозвольте познайомити Вас з моїм асистентом

Do you know Mr. Brown?	Ви знайомі з містером Брауном?
Let me acquaint you with Mr. Brown	Дозвольте познайомити Вас з містером Брауном.
Is this face (name) familiar to you?	Вам знайоме це обличчя (ім'я)?
Meet Helen, she is my groupmate	Познайомтеся з Оленою, вона моя одногрупниця.

3. Dialogues to be remembered

***

- Good morning, Sam!
- Hello, Frank. It's good to see you. How are you?
- I'm fine, thank you. And you?
- I'm doing very well, thanks.
- How's your new job?
- Nothing to complain about.

***

- Good afternoon, Mr. Robinson.
- Good afternoon, Mrs. Smith.
- How are you this morning?
- Not too bad, thank you. How about you?
- The same. Did you have a nice week-end?
- It was great, thank you!

***

- Hi, Liudmyla! How are things with you?
- Nothing new. Same old things.And you?
- Same here. It's a beautiful day, isn't it?
- Oh, yes, great.
- Would you like to go out of town?
- With pleasure.

***

- Good evening, Helen! I was very sorry to hear about your mother's illness. How is she now?
- Nice meeting you, Victor. Thank you, I appreciate your concern. She's much better.
- Is she? Happy to hear it.

***

- How are you doing? I hope you are enjoying your new apartment.
- Oh, yes, I really do.

***

- Hello, Mark! Nice meeting you again. How have you been?
- I've been quite well and I'm happy to see you too.
- Have you been at home all this time?
- I was on vacation in Spain.

- Did you like it there?
- “Like” is not the right word. It was terrific!
- What about the rain in Spain?
- No rains at all. The weather was ideal.

***

- Let me introduce myself. I’m Kate Kochalova.
- I’m Irina, an ecologist-reseacher from Kyiv.

***

- How do you do, Mr. Moris? Glad to get acquinted with you.

***

- My name’s Bush, Robert Bush. I’m a university teacher.
- Nice meeting you, Mr. Bush, I hope I’m not late.
- No, just in time.

***

- Good evening, sir. I’m Ivan Petrov from Kharkiv Aviation Company Ltd.
- Good evening. Pleased to meet you.
- May I ask you some questions?
- You’re welcome.
- Your face is familiar to me, haven’t we met before?

***

- What's the idea of your new computer program?
- Have you got acquainted with it?
- Not yet, it's too sophisticated.

***

- My name is Justin Luis. Who are you?
- Well, my name is well-known you could see me in movies.
- Where do you usually sit there?

***

- Excuse me, are you Charlie?
- No, you've mistaken me for someone else.
- (in a minute) I'm sorry, are you sure you are not Charlie?
- O.K. Let me introduce myself I'm Robert.
- (in a minute) And still, let me ask you again, are you Charlie?
- Damn it! Yes, I'm Charlie if you want it.
- Strange. You don't even resemble him.

4. Translate in writing

***

- Таня, познайомся з моїм братом Михайлом .
- Рада познайомитися, Михайле, якщо ви не проти, щоб я називала вас так.
- Аніскільки. Рад зустрічі з вами, Таню. Я дуже багато чув про вас від Катерини.
- Сподіваюсь, тільки добре.
- Звісно.
- Вам подобається Київ?
- Подобається – не те слово. Це своєрідне історичне місто.
- Ви вже були в Печерській Лаврі?
- Ще ні.
- Бажаєте подивитись? Це близько.
- Дякую, дуже люб'язно з вашого боку.

***

- Добрий день, пан Смирнов.
- Добрий день, пані Климова.
- Як справи (йдуть зранку)?
- Непогано. Дякую. А як у вас?
- Так само. Добре провели уікенд?
- Чудово, дякую.

***

- Привіт, Сашо! Як справи?
- Нічого нового. Усе так само.
- І у мене теж. Чудовий день, вірно?
- О так, чудовий.

- Не хочеш поїхати за місто?

***

- Добрий день, пане Сміт!
- Вітаю, пане Роу, дуже радий вас бачити. Як справи?
- Нічого нового, а в цілому (in general) скаржитися нема на що.
- Де ви були весь цей час?
- Я був у відпустці в Москві у своїх російських друзів.
- Правда? Вам сподобалося?
- Не те слово! Було просто здорово. Мої друзі – дуже компанійські люди, а Москва – чудове своєрідне (unique) місто. А я чув, що ви змінили квартиру. Це правда?
- Абсолютно вірно (absolutely). Нам наша нова квартира дуже подобається. Не бажаєте подивитися (to have a look)? Це близько (near here).
- Гарна думка, чому б ні.

5. Situation for spontaneous projects

1. You are going to enter a higher school but you haven't yet chosen which one. You meet a friend of yours who is a first year student of the Kharkiv Automobile and Highway University. You ask him a lot of questions about the University, about student's life, about sport and sporting activity at the university. And he helps you to make your choice.
2. You study in Oxford (Cambridge, Eton). Your new British friend is asking you about sports, games, hobbies and past time of the youth in Ukraine.
3. You don't feel well. You attend the lecture of a well-known doctor about healthy ways of life in order to be "healthy, wealthy and happy". You are asking him for some pieces of advice.

TEST /REVIEW

Task I. Максимальна кількість балів: 10

Choose the correct word to complete the sentences.

1. The Earth ... round the Sun

A) walks C) go
B) went D) goes

2. We ... facing the environmental crisis today.

A) is C) am
B) are D) were

3. I ... to read the article on the ecological development tonight.

A) was going C) am going
B) are going D) were going

4. The term “ecology” ... together with the industrial revolution of the 19th century.
A) appears C) have appeared
B) appeared D) is appearing

5. The physical environment ... light, heat, water, wind, carbon dioxide.
A) includes C) involved
B) consists D) excludes

Task II. Total 10
Make the following sentences negative.

1. Modern ecology began with Charles Darvin.
2. Nature has always served Man.
3. Water pollution is very serious.
4. The annual fish catch already exceeds what the world’s oceans can successfully sustain.
5. He is testing samples of soil now.

Task III. Total 10
Choose the necessary word or expression to complete the sentences.

1. I think that fruit juice is …
A) fattening C) nutritious
B) poisonous D) dangerous

2. Polluted air leads to the end of the …
A) population C) world
B) experiment D) civilization

3. With the industrial revolution negative influence on Nature began to …
A) decrease C) low
B) increase D) stop

4. Greenpeace is a very famous pressure …
A) circle C) movement
B) group D) venture

5) Death from cancer increases people’s ….
A) health C) awareness
B) problems D) concern

Task IV. Total 20
Give English equivalents of the following.

1. біологічне та фізичне навколишнє середовище
2. порушувати баланс
3. скорочення споживання
4. я ціную вашу турботу.
5. дозвольте відрекомендуватися
6. як справи?
7. нема на що скаржитися.
8. життя йде своїм шляхом.
9. дозвольте познайомити Вас з моїм асистентом.
10. як ся маєте? (3 expressions).
11. прекрасно, дякую
12. нічим похвалитися.
13. нічого нового, усе як і раніше.
14. повітря, яким ми дихаємо.
15. адаптація організму
16. випускні гази
17. шкодити
18. відходи
19. розповсюдження
20. джерела забруднення

Task V. Total 10

Compose sentences with proposed question words.

1. Our planet is finite. (What …?)
2. All life shares its resources and energy from the Sun. (What…?)
3. The term ecology was introduced by Charles Darvin. (By whom…?)
4. The worldwide movement started functioning in 1971 (When…?)
5. In our country there are several ecological pressure and interest groups. (Where…? … What…?)

Task VI. Total 10

Compose sentences using the following words.

1. futurologists, the, and, of, the, planet prospects, problems, blue, interest, scientists, and.
2. the, in, headquarters, of, the, Amsterdam, Greenpeace, are.
3. movement, this, in, 25, operates, countries.
4. Aim, of, the, is, Greenpeace, to, wildlife, from, wastes, toxic, protect, tests and nuclear.
5. Are, of, and, plants, in, of, animals, danger, extinction, all, of.

Task VII. Total 20

Translate into English.

1. З давніх часів Природа служила людині.
2. Забруднення довкілля – одна з найважливіших проблем сьогодення.

3. Великі міста страждають від смогу.
4. Автомобілі стали головним джерелом забруднення довкілля в промислових країнах.
5. Великі міста з заводами та фабриками, які забруднюють повітря, можна побачити у всьому світі.
6. Зараз ми намагаємося зменшити забруднення довкілля.
7. Кожна людина може вплинути на рішення проблеми забруднення довкілля.
8. У Китаї з кожним роком зростає виробництво автомобілів, які забруднюють атмосферу.
9. Велосипед – найекологічніший вид транспорту.
10. Екологи розробили декларацію Взаємозалежності.

Task VIII. Total 10

Give 3 forms of irregular verbs and compose 5 sentences with them.

1) to feel
2) to hear
3) to see
4) to smell
5) to forgive
6) to know
7) to understand
8) to mean
9) to take
10) to find

1.2 UNIT 2
Environmental damage through history

The rise of civilization depended upon the increasing ability of people to rise and control their environment

Declaration of Independence

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. airborne (adj) – той, що переноситься повітрям
2. ancestor (n) – предок
3. ancient (adj) – древній
4. apparently (adv) – очевидно
5. befoul (v) – забруднювати
6. cedar (n) – кедр
7. damage (n) – шкода
8. deliberately (adv) – навмисно

9. destitution (n) – злидні
10. deterioration of the environment – забруднення навколишнього середовища
11. eliminate (v) – знищувати, усувати
12. eradicate (v) – викорінювати, знищувати
13. extinction (n) – вимирання
14. fragile (adj) – слабкий, крихкий
15. hunter-gatherer (n) – мисливець-збирач
16. imposes an important stress – викликає сильне напруження
17. landscape (n) – ландшафт, пейзаж
18. literally (adv) – буквально
19. odour (n) – запах
20. predator (n) – хижак
21. predecessor (n) – попередник
22. scrubland (n) – чагарник
23. shelter (v) – покрівля, притулок
24. soil contamination (n) – забруднення ґрунту
25. sophisticated (adj) – складний
26. staple crop (n) – основна культура
27. tame (n) – ручний
28. thrive (v) – процвітати, квітнути
29. waterlogging (n) – затоплення
30. woodland (n) – ліс

II. Vocabulary check.

Activity 1. Give English equivalents of the following.

1. критична точка
2. геологічні докази
3. древні люди
4. випалювати ліс
5. руйнівний вплив
6. керувати вогнем
7. вигляд землі
8. релігійні споруди
9. ручний
10. полив
11. голод
12. свідоцтво
13. тривалість життя
14. крихка споруда
15. надмірна іригація (полив)

Activity 2. Match the following words with their explanations.

savannah	an open flat stretch of grassy land in a warm and sometimes wet part of the world
rainforest	wet tropical forest with tall trees growing thickly together
extinction	the state of being or becoming extinct
population growth	the accumulation of highly soluble sodium, magnesium and potassium salt in a soil
salinization	the accelerated removal of soil through various processes
soil erosion	a permanent increase in population size brought about by an increase in birth over deaths or immigration over emigration
tame	gentle and not afraid, trained to live with man
settler	remain alive
irreversible	chief material
survive	that cannot be reversed
staple crop	person who has come to live in a newly developing country

III. Grammar Review

Утворення множини іменників

Множина іменників утворюється додаванням до форми однини закінчень –s,-es.

-s *Shop- shops; day- days*

-es після *y* з попередньою приголосною, при цьому *y* змінюється на *i:city-cities, country-coutries*
після *o*: tomato – tomatoes, але piano-pianos; photo-photos
Після *–s,-ss,-ch,-sh,-tch,-x,-z*: box-boxes; dress-dresses; bench-benches
Після*-f,-fe,* при цьому *–f,-fe* змінюються на *v: wife-wives, life-lives;leaf-leaves;loaf-loaves.*
Усі інші іменники на *–f,-fe* - за загальним правилом : *safe-safes; roof-roofs.*

Вимова закінчення –s

Після глухих приголосних вимовляється [s]	a desk-desks a map-maps a month-months

Після дзвінких приголосних і голосних вимовляється [z]	a sea-seas a wall-walls
Після *ce, x, s,ss,sh,ch,ge* вимовляється [iz]	a box-boxes a bus-buses a family-families a place-places

Незлічувані іменники

Вживаються тільки у формі однини	Business,friendship,peace, money,ink,sugar,weather, advice,hair,information, knowledge,news, progress	His business is very successful. The weather is wonderful today.
Іменники, що мають форму однини,яка завжди узгоджу-ється з дієсловом у формі множини.	Police,committee,people, cattle,the poor, the rich,the youth, family.	Our family are all early risers.

Інші способи утворення множини іменників

Винятки	Man-men,woman-women,foot-feet,child-children,tooth-teeth,ox-oxen,goose-geese, mouse-mice
Однина=множина	A swine -many swine, a sheep-many sheep, a deer-many deer
Іменники грецького та латинського походження	Curriculum-curricula;datum-data;phenomenon-phenomena;basis-bases;thesis-theses;crisis-crises;radius-radii;nucleus-nuclei;stimulus-stimuli;index-indexes(indices)
Складені іменники	Mother-in-law- mothers-in-law;fellow-worker-fellow-workers; forget-me-not- forget-me-nots.

- **Note how certain nouns can be used in the singular and plural with a different meaning.**

Singular	Plural

Give me a **glass** of water, please.	I've been wearing **glasses** since I was 8 years old.
Has she always had short **hair**?	There are so many **hairs** in the sink!
Have you got any lined **paper** I could use?	He showed his **papers** to the customs officer.
I can't talk now; I have a lot of **work** to do.	A lot of Dali's **works** are on display in this museum.
We had at least 200 **people** at our wedding.	The **peoples** of Europe are hoping for change.
The **rain** is falling really heavily now.	The villagers are hoping for the **rains** to come soon.
You need **experience** for this job.	I had a lot of interesting **experiences** visiting Asia.

Exercise 1.
Underline the correct verb form:

1. Ecology is/are my favourite subject.
2. Wood come/comes from trees.
3. The news was/were interesting this evening.
4. His advice was/were useful.
5. Your furniture is/are made from precious wood.
6. Butter contain/contains a lot of fat.
7. Your knowledge on environment science is/are quite impressive.
8. Japanese is/are difficult to learn.
9. Most people is/are worried about the future.
10. Water is/are necessary for survival.

Exercise 2.
Write the correct form of the verbs in brackets:

1. The people of Asia … (believe) in various religions.
2. 20 years … (be) a long time.
3. Cathaway Pacific … (be) an Asian airline.
4. Flu … (make) you feel miserable.
5. A loaf of bread … (cost) more now than it did ten years ago.
6. I think olive oil … (add) a lot of flavour to cooking.
7. Half the sheep … (be) killed because there was so much snow in the mountains.
8. Some people think French … (sound) so romantic.
9. Physics … (involve) a lot of theoretical study.
10. Gravity … (pull) things towards the centre of the Earth.

Present Perfect Simple and Present Perfect Continuous
Present Perfect Simple

Вживання

1.	Закінчена дія у вашому житті до теперішнього часу	Have you ever been to the USA?
	У реченнях без обставин часу	She's lived in China and Japan. We've reduced the prices.
2.	У реченнях з прислівниками або обставинними фразами: *already,ever,never,yet,always,often, seldom,rarely,several times, today, just, this evening,for a long time,for, since, how long?,up to now, up to the present,lately.*	Have you had a holiday this year? He has never seen the rainbow. We haven't met since 2000.
3.	У ситуаціях, які почалися в минулому і все ще продовжуються	He's been an architect since 1992. How long have you known her?
4.	Дії у минулому, які продовжуються до тепер, коли ми вказуємо кількість	She has designed a lot of fashion items for this firm . How many tests have you done?

Present Perfect Continuous

Вживання

1.	Дії, які почалися у минулому і все ще продовжуються, включаючи теперішній час.	We've been producing pens since the 1980s. This plant has been polluting the air since it was built in 1995. He's been living here for five years.
2.	Дії, які почалися у минулому і щойно закінчились .	You look very tired. Have you been working? I'm hot because I've been running.

*The Present Perfect Continuous і Present Perfect Simple мають подібне значення. Яку форму вибрати,залежить від того, що нас більше цікавить: сама дія, чи її результат.

e.g. I've been fixing the car (My hands are dirty).

e.g. I've fixed the car (Now I can drive to work).

For and since

We use **for** with the period of time we use **since** with a point in time

For	three days	since	Tuesday
	five hours		8 August
	a month		4 o'clock
	ten minutes		last summer
	a long time		1995
	ages		I last saw you

Exercise 3.
Underline the correct verb form:

1. Life expectancy is/has been growing in modern world.
2. She has made/has been making three business trips to Kyiv this month.
3. Recently the ozone layer over the poles depletes/ has been depleting
4. She has travelled/has been travelling to the UK many times since 1999.
5. Some countries have made/have been making a lot of efforts to reduce CFCs emissions since 1992 when the Kyoto protocol was signed.

Exercise 4.
Put the verbs in brackets into the correct form.

An exciting trip.

I just (to receive) a letter from my brother. He (to be) in Australia. He (to be) there for six months. He (to be) an engineer. He (to work) for a big firm and he already (to visit) a great number of different places in Australia. He (to go) to Alice Springs, a small town in the centre of Australia. He soon (fly) to Perth. My brother never (to be) abroad before, so he (to find) this trip very exciting.

Exercise 5.
Use the words in capitals to form a word that fits in the space in the same line.

Choosing a car

There comes a time when not having a car	
becomes … . Choosing your first car is an	Practical
…experience. Most men's	Excite
…is so vivid that they see themselves speeding	Imagine
along in a…sports car, attracting…	Power
looks from those they pass. In	Envy
…this does not happen that often. More	Real
practical and…aspects have to be considered	Finance
when choosing a car. The…is normally	Choose
between a small city car which is…to run	Economy

and easy to park and a larger family car which would be more…and probably be fitted with more…features.

Comfort
Safe

Exercise 6.
Translate into English

1. Сьогодні дуже холодно; цілу ніч йшов сніг.
2. Ми познайомились місяць тому назад, але з тих пір я нічого про нього не чула .
3. – Ви коли-небудь були в Австралії?
   – Ні, але я завжди мріяла там побувати.
4. Потепління клімату змінює рівень світового океану.
5. Дякую вам за все, що ви зробили для мене.
6. Вирубка вологих тропічних лісів веде до знищення крихкої рівноваги у природі.
7. Багато цінних порід дерев були винищені заради людської пихи.
8. Коли ви останній раз їздили до Криму? – Я взагалі ніколи не був у Криму.
9. Дощ закінчився, і знову світило сонце.
10. Аральське море майже наполовину висохло через людську діяльність.

IV Pre-text discussion
Activity 1. Do you know that:

- Modern man did much damage to the environment due to the development of civilization.
- In ancient Babylon garbage accumulated in the houses and human wastes were rarely carried further than the nearest street.
- Modern man did much damage to the soil by intensive farming.
- The problem of soil erosion appeared in ancient north European countries.
- World population is reaching critical levels.
- Rapid increase in the rate of soil erosion occurred about 4 000 years ago.
- We discovered how to manipulate fire about a million years ago.
- The elephant and the buffalo were animals who suffered from our ancestors.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following:

1. The modern life style ruins the environment.
2. The soil erosion flourishes now.

V. Read, translate text 2A.

Text 2A.

“Environmental damage through history”

The world has reached a crisis point. Our modern lifestyle is destroying the fragile environment. We tend to imagine that ancient people were “environmentally friendly” and lived in harmony with nature. Some people (such as the American Indians) did indeed respect and protect their environment. But there are many historical examples of ancient people who destroyed the land they inhabited. In doing this, some of them destroyed their livelihood.

Many communities today have been burning down trees to clear land for growing crops. Some of the earliest human communities also burned large areas of woodland for this purpose. Human societies evolved from small groups of hunter-gatherers to larger societies based around agriculture and domestic animals. According to many anthropologists, this was the beginning of "civilization." But it was also the beginning of mankind's destructive influence on the environment. We probably discovered how to manipulate fire about a million years ago. Until that time, most of the earth's land surface was covered in thick forests. Large forest fires created a new type of landscape in many parts of the world – the savannah. The world's population then was only five or ten million. But these people literally changed the face of the earth. Several centuries later, the inhabitants of Easter Island in the Pacific Ocean cut down all their trees in order to erect huge religious statues. They apparently forgot that the trees were their major source of food, fuel and shelter. Within a few years, the rich and sophisticated society on Easter Island was reduced to destitution and starvation.

Speaking about environmental damage we should mention the threat of extinction, which affects many animal and plant species in the world today. We first demonstrated our ability to eradicate other species several centuries ago. The dodo was a large bird, rather like a turkey, that lived on the island of Mauritius in the Indian Ocean. The bird had no natural predators and never developed the ability to fly. Despite this the dodo population thrived on the island for thousands of years. When the first humans arrived in Mauritius in the early 16th century, they found that the dodos were very tame. The birds walked right up to the human settlers and did not try to run away. The settlers killed the dodos, partly for food and partly for sport. By 1680, less than 200 years after the first human settlement on Mauritius, the last dodo was dead. Only the expression "as dead as a dodo" lives on in the English language.

Other animals who suffered at the hands of our ancestors included the elephant and the buffalo.

Modern man has done much damage to the soil by intensive farming methods. One problem is saliniization from excessive irrigation. But salinization is not entirely a problem of modern, high-technology agriculture. Our ancestors probably discovered irrigation about 5,500 years ago. The ancient Mesopotamians, who lived about 4,500 years ago, were enthusiastic farmers. They built extensive

irrigation channels in river valleys to try to increase their crop yields. Unfortunately, this led to waterlogging and salinization of the soil. The yield of the staple crop, barley, fell dramatically and a prolonged famine occurred. The people who survived the famine had to change their staple crop from barley to wheat, which tolerated the salty soil better. The problem of soil erosion has occurred ever since man began to destroy forests.

There is geological evidence that a rapid increase in the rate of soil erosion occurred about 4,000 years ago in the northern European countries, particularly Britain, France and Germany.

The problems of urban expansion, industrial pollution and waste disposal should be mentioned as well. Ever since humans first tried to live together in towns, there have been problems providing food, fuel, water and sanitation for urban communities. The great city of Ur (the biblical home of Abraham) was partially destroyed by floods after the inhabitants removed the trees around the headwaters of the river Euphrates to use as fuel for their fires. Although the Bible says that the cause of the flood was the anger of God, the real cause was probably environmental damage by man.

The world is now a global village. World population has been reaching critical levels. During the past 200 years, humankind has invented powerful technology that multiplies each individual's destructive impact on the environment. 0ne man with an ax can cut down one or two large trees in a day, with modern machinery the same man can cut down a whole forest. Population growth and modern technology mean that we cannot afford to repeat the mistakes of our ancestors. The environmental crisis we are facing today will not just destroy a tiny corner of the earth. If we do not take action soon, it may cause irreversible damage to the entire planet.

VI. Comprehension check

Activity 1. Do the false/true activity

1. The birds were afraid of people and never walked right up to the human settlers,they always run away.
2. The expression "as dead as a dodo" lives on in the English language.
3. You can hardly find many historical examples of ancient people who destroyed the land they inhabited.
4. Large forest fires created a new type of landscape in many parts of the world.
5. The great city of Ur was fully destroyed by fires.
6. The today's environmental crises will destroy every tiny corner of the earth.
7. One man with an ax can cut down one or two large trees in a year.
8. The dodo was a tiny bird rather like a sparrow.
9. To erect huge religious statue ancient inhabitants cut down all their trees.
10. We who live today repeat the mistakes of our ancestors concerning the environment.

Activity 2. Read through text 2A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Man first began to destroy the environment when _____
2. A million years ago the size of the world's population was _____
3. The reason why the inhabitants of Easter Island cut down their trees was _____
4. The dodo became extinct because settlers on Mauritius _____
5. Elephants were common in most parts of the world _____
6. Salinization means that the soil _____
7. When man started to destroy forests, soil erosion _____
8. Poor sewage disposal has always caused _____
9. If nothing is done about the environment crisis today, _____
10. During the last two hundred years the two main factors which have destroyed the environment were _____

VII. Discussion

Activity 1. Define the logical parts of text 2A entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 2A.

Activity 3. Work in pairs. Read, translate and learn the following dialogues.

- What does the word „pollution" imply, please?
- It implies deterioration of the environment — the air we breathe, the water we drink or bathe in; the soil contamination that befouls the country; the aggressive noise that imposes an important stress on the nervous system; the odour nuisance (injurious or obnoxious to the community" or members of it) which has a strong bearing on the comfort of life. All that may be the cause of health hazards.
- What is suggested by the words "continental pollution"?
- Well, when we speak of continental pollution we mean that pollution knows no boundaries, whether it is airborne, waterborne, noise or smell.
- Could you give an example to support this statement?
- Sulphur dioxide, for instance, has been reduced nearly to the ground level in Britain but it is airborne from high chimneys smoke to damage the forests of Norway. Rivers common to several nations carry all sort of garbage downstream.
- They say that pollution is an indispensible «partner» of economic progress. Is that so?
- Well, it is true in a way, if it is not attacked properly. Today, the most widely discussed aspects of the pollution problem are those caused by industrialization, urbanization and motorization. At present, most highly developed countries are taking steps to fight pollution. Many countries cope

with pollution in any form, and the problem is being successfully solved.

- What is the role of WHO in the matter?
- With the creation of WHO the efforts to prevent deterioration of the environment have acquired a global dimension.
- What aspects of the pollution problem have received priority of attention at WHO?
- The problem of air and water pollution.

***

- What were you doing the whole evening yesterday? I couldn't get you on the phone.
- Really? I was reading a very interesting article "Environmental damage through history".
- Who is the author of this article?
- The article was written by a well-known English ecologist Mr. Turbines.
- And what was the essence of the article?
- The article described the damages to the environment caused by our ancestors.
- It's clear.

***

- Do you think that ancient people were "environmentally friendly" and lived in harmony with nature?
- I don't think so. As far as I know from the history of ecology, the destruction of nature had started since ancient times.
- I know that many countries today burn down trees to clear land for growing crops.
- You see, some of the earliest human communities also burned large areas of woodland for this purpose.
- And it was the beginning of environmental pollution, wasn't it?
- Yes, it was. But this was one of the ways in ancient society to grow crops and to get food.

***

- Our lecturer told us that there was threat of extinction of many animal and plant species of the world today.
- Yes. I know about it. And I also know that we first demonstrated our ability to eradicate other species several centuries ago.

***

- Have you ever heard such word as "dodo"?
- No, and what does it mean?
- It means "дронт".
- "Дронт"? what is it?
- Dodo was a large bird, rather like a turkey.
- And where did it live?
- It lived on the island of Mauritius (Маврикий) in the Indian Ocean.

When the first humans arrived in Mauritius in the 16th century they started killing the dodo for their food.

- Are there any dodos now?
- No, only the expression “as dead as a dodo” lives in the English language.
- I am sorry to hear this.

Activity 4. Make up your own dialogues on the theme “Environmental damage through history”.

VIII .Skim the text and get ready to speak about the history of ecology.

Text 2B.

Early Civilizations and the Natural Environment

1. Mesopotamia and the natural environment.

Cities, temples, palaces, and tombs of once-flourishing societies now lie in ruins throughout the Middle East. Here people first developed high civilizations, and here, the surviving evidence shows that the course of history is not always that of upward human progress. The rise of civilizations depended upon the increasing ability of people to use and control their natural environment, and the downfall of these same civilizations was due to their failure to maintain a harmonious balance with nature. They suffered a true ecological disaster: not simply a change in climate — for people have weathered climatic changes before and prospered — but a disaster of their own making.

The world's first cities, which arose in Mesopotamia and nearby, were made possible by a changed relationship between human beings and the environment, based on a new agriculture using two important inventions: systematic irrigation and the plow. The fertile, sandy, easily turned Mesopotamian soil made the plow useful. The rivers provided the essential water, but with a flow so undependable that control by major irrigation works was required. The new agriculture enabled a much larger human population to live in a given area, and an increasing portion of the population, freed from the need to work the soil, could take up specialized occupations.

The earliest cities seem to have shared some of the problems which have become so annoying in their modern counterparts. Babylon, in its day the largest city of the area, had a city wall ten miles long, and even including its suburbs was consequently only of moderate size by modern standards. The evidence of narrow streets and small rooms in houses huddled within the compass of defensible walls tells us that crowding in ancient cities was extreme. Garbage accumulated in the houses, where the dirt floors were continually being raised by the debris, and human wastes were rarely carried further than the nearest street. The water supply from wells, rivers, and canals, was likely to be polluted. Life expectancy was short, due in part to the high infant mortality. Flies, rodents, and cockroaches were constant pests. Even air pollution was not absent. In addition to dust and offensive

odors, the atmosphere was filled with smoke on calm days. Even today, in large preindustrial cities such as Calcutta the smoke of thousands of individual cooking fires, in addition to other human activities, produces a definite path of smoke and dust which seldom dissipates for long. Under these unhealthy conditions, the death rate must have been high in Mesopotamian cities.

Ancient legends described an actual ecological event; the cedars of Lebanon, after centuries of exploitation and export to all the surrounding lands, were completely destroyed except for a few small groves, leaving their mountain slopes open to severe erosion.

2. Ancient Egypt and the natural environment.

Far to the east of Mesopotamia, but in contact with it, another civilization flourished in the Indus River Valley. It is mentioned here because many scholars say that it fell because of mistreatment of its fragile semidesert environment. While Mesopotamian cities were built largely of sun-dried clay bricks, the Indus Valley cities used baked bricks almost exclusively, and great quantities of wood were required to fire them. This, combined with other uses of wood, produced widespread deforestation, while grazing of cattle, goats, and sheep further reduced the vegetative cover. The results included desiccation, flooding, and erosion. Some authors also theorize that the dust blown from the dried, denuded land produced a permanent layer of dusty haze in the atmosphere over the Indus Valley, which actually altered the climate by causing a temperature gradient that shifted the monsoon rains to the east, out of the area, and also caused premature seeding of the clouds which did develop in the area, further reducing the rainfall. Other scholars postulate a series of disastrous floods, which could also have been caused by deforestation.

Egyptian attitudes toward nature reflect the dependable periodicity of their natural environment. Their gods were deities of nature, intimately sharing the characteristics of the animals and plants which were their attributes.

Well-to-do Egyptians loved gardens, they planned them carefully with symmetrical beds of flowers and shallow pools of water, they picked up vegetables, herbs, vines, and fruit and shade trees to plant in them.

The history of the Egyptian environment in antiquity is marked by a great reduction in the numbers and abundance of wildlife. This was primarily due to the conversion of marshes into fields, but partially also due to hunting. Egyptians from the pharaoh on down hunted water birds and animals in the remaining wetlands, and pursued lions, wild cattle, deer, and antelope in the nearby desert. Today even once-abundant species are seldom seen.

As Egypt was never forested, most wood had to be imported from Lebanon or the Upper Nile. The chief material for major construction, stone, was abundant in Egypt and widely quarried. Copper and tin were mined in Sinai and other desert margins or imported from abroad.

The regularity of the Nile saved Egypt from some of the problems of Mesopotamia. The floods provided annual drainage, and salinization was not widespread in Egypt. In fact, Egypt continued to produce food surpluses throughout the ancient period and was a major exporter of grain to Greece and Rome.

All told, the unique environment of Egypt tended to shelter it from some of the bad effects of ecological change felt elsewhere in the ancient world, and helped to ensure its long continuity as a relatively conservative civilization.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text. Begin your paragraph with sentence 7.

1. There are, however, two important differences between ancient civilizations and the world today.
2. Second, during the past two hundred years, humankind has invented powerful technology which multiplies each individual's destructive impact on the environment.
3. If we do not take action soon, it may cause irreversible damage to the entire planet.
4. One man with an ax can cut down one or two large trees in a day; with modern machinery, the same man can cut down a whole forest.
5. The environmental crisis we are facing today will not just destroy a tiny corner of the earth.
6. We no longer live in isolated communities many hundreds of miles from our neighbors.
7. Modern people are selfish, but probably no more selfish than most of their predecessors.
8. First, there are so many more people in the world today.
9. Population growth and modern technology mean that we cannot afford to repeat the mistakes of our ancestors.

Activity 2. Translate into English using the dictionary.

Людина своєю діяльністю на планеті все більше впливає на природу, на жаль, переважно негативно.

На території нашої держави екологічна криза почала виявлятися ще з середини 50-х років XX ст. Саме цей час умовно можна вважати початком безконтрольного періоду експлуатації природи, а отже, і її забруднення. Щорічно у природний обіг вводилося близько 1,5 млрд тонн первинної сировини. Це майже 30 тонн на кожного громадянина України. У результаті цього обсяг накопичених відходів від добувної, енергетичної, металургійної та деяких інших галузей промисловості становить уже близько 15 млрд тонн. Набагато більше їх потрапило у воду та повітря, які є первинною основою

життя. Причина цього – відсутність природоохоронних інституцій та застарілі технології. На додаток – в Україні найбільша у світі розораність земель, безконтрольне використання великої кількості пестицидів, дві третини яких мають чіткий мутагенний ефект. І це за умов, коли близько 40% усіх сільськогосподарських угідь мають слабку здатність до самоочищення, тобто сприяють накопиченню отруйних речовин у життєво важливому шарі орного грунту.

IX. Long-term project work.
Prepare projects on the following topics.

1. During the past two hundred years humanity has invented powerful technologies having destructive impact on the environment.
2. Environmental damage through Ukrainian history.
3. Kharkiv through history and its natural environment.

X. Spoken English (Every day English)

1. **Remember!**

Від вміння прощатися багато залежить. Можна так розлучитися, що вашому співрозмовнику більше не захочеться з вами зустрічатися, або, навпаки, він буде всіляко прагнути нової зустрічі.

Що треба пам′ятати:

Ніколи не прощайтеся різко, раптово. Співрозмовника треба підготувати до закінчення розмови. Звичайно на прощання кажуть один одному що-небудь приємне на зразок:

It was nice meeting you. (Було приємно зустрітися)

або:

I've really enjoyed talking to you. (Мені було так приємно поговорити з вами)

Зверніть увагу на те, що останню фразу можна використовувати тільки в тому випадку, коли співрозмовники зустрічаються вперше. А зараз наведемо приклад „найвищого пілотажу" в мовному етикеті. Уявіть собі, що ваш співрозмовник дуже балакучий і вам треба якось зупинити його та попрощатися. Яку фразу ви би використали?

I'm afraid I need to be leaving. (Боюся, що мені треба йти)

I'd better be going, it's 6 o'clock. (Я, мабуть, піду, вже 6 година)

Мабуть, обидва варіанти не будуть досить ввічливими. Проте такі фрази як:

I've taken up too much of your time already.

(Я і так забрав у вас багато часу)

або:

Let me leave you so you can get back to your work.

(Мабуть, залишу вас, щоб ви могли повернутися до своєї роботи)

будуть досить коректними. Ну, а способів сказати „до побачення" дуже багато:

Good bye. Good bye for now. Bye-bye. Bye. So long. See you later (next week). Later. Good night. Keep well. Take care. Take it easy.

Якщо ви прощаєтесь з офіційною особою або людиною старшою за вас віком або положенням, не витончуйтесь у красномовстві, скажіть просто **Good bye** і тоді вже, напевно, не потрапите в незручне положення.

2. Speech patterns.

Parting (Good-bye).

Good bye. Bye-bye. See you. Keep well. Take care. Good luck. So long. Bye for you! I kiss you good-bye. Give my love to …

Thank you for coming.	Спасибі, що прийшли.
Thank you for a wonderful evening.	Спасибі за чудовий вечір.
Thank you for the invitation.	Спасибі за запрошення.
Let’s meet next week, Sunday!	Давайте зустрінемося наступного тижня в неділю.
Let’s keep in touch.	Давайте підтримувати зв'язок.
Let’s hope for the meeting.	Давайте сподіватися на зустріч.
Let’s hope for the best.	Будемо сподіватися на краще.
Let’s meet soon.	Давайте зустрінемося найближчим часом.
It was nice talking to you.	Було приємно поговорити з вами.
It was great meeting with you.	Я отримав незабутнє задоволення від зустрічі з тобою.
It was a pleasure to talk with you.	Було приємно поговорити з вами.
It was a pleasure to see you.	Було приємно побачити вас.
It was an enjoyable evening!	Ми чудово провели вечір!
It was a wonderful trip!	Була чудова поїздка.
It is really too late.	Дійсно, дуже пізно.
I am sorry to part with you.	Шкода розставатися з вами.
I am very sorry about it.	Мені дуже шкода.
I am afraid I need to be leaving.	Боюся, що мені потрібно йти.
I’m going to be late.	Я спізнююся.
I must hurry.	Я повинен поспішати.
I must be going.	Настав час іти.
I must be going, urgent business.	Настав час іти, термінова справа.
I should be going, it's getting late.	Настав час іти, уже пізно.

I'd better be going. It's 10 o'clock.	Мені пора. Уже 10 година.
I've taken too much of your time.	Я відняв у вас багато часу.
I kiss you. Good bye.	Цілую. До побачення.
Remember me to your aunt.	Передайте привіт вашій тітці.
Give my love to your uncle.	Передайте привіт вашому дядькові.
My best regards to your kids.	Привіт дітям.
Have a comfortable journey.	Щасливої подорожі!
Have a good time.	Бажаю добре провести час!
Have a happy holiday.	Гарних канікул!
Have a happy landing.	М'якої посадки!
Have a happy week end.	Бажаю добре провести уїк-енд!

3. Dialogues and jokes to be remembered

***

- Thanks for a wonderful evening, Lisa. I had a great time.
- Me too. Let's meet next week and see a new movie.
- Sure thing. See you later.
- Take care.

***

- Gosh, I'm going to be late if I don't hurry. Nice talking to you, Irvin.
- Same here. Take it easy.
- You, too. Till tomorrow.

***

- Have you seen Helen lately?
- Not since last party. I heard she went to Mexico for a vacation.
- Really? I didn't know that.
- Well, let me run. Let's keep in touch. So long.
- Bye for now.

***

- I really hate the idea of going, but…
- Oh, how time flies! Is it really that late!?
- Yes, it's about 8.
- Give my love to your kids and bring them with you next time.
- Thank you, by all means. Good bye.
- Bye-bye. Drive safe.

***

- I must be going, urgent business. It was a pleasure.
- The pleasure was mine. Hope we'll meet soon. Remember me to Jane.
- She will be happy to hear from you. Do come and visit us next weekend.
- Thank you, by all means. I'll give you a ring on Friday and we'll finally agree.

- See you on Saturday.
- Till Saturday.

***

- Dear collegues! We are so sorry to part with you!
- Nothing can be done. The conference is over and we are leaving.
- Thank you so much, hope you'll come next year again.
- We'd like to. You've been most hospitable.
- Good bye!
- All the best.

***

I never say "good- bye" to Zina, I always say always.
What do you mean?
I mean she always stays so long before going.

***

(The door bell rings)
- Who's there?
- It's me, your doctor.
- Sorry, I can't see you, doctor, I'm feeling not well. Good bye.

***

- I hate saying good-bye, John.
- Do you? I can stay for while.
- I'd better say "See you later…"

4. Translate in writing

***

- Мені так не хочеться розлучатися з тобою, Володя, але якщо я не покваплюсь, то запізнюсь.
- Нічого не поробиш (Nothing doing). Було приємно побалакати з тобою. Сподіваюсь, ти знову зайдеш наступного тижня.
- Добре, я зателефоную і ми домовимось.
- Переказуй вітання дружині і дітям й наступного разу візьми їх з собою.
- Дякую, обов'язково. Дякую за чудовий вечір. До зустрічі.
- Бувай.

***

- Я повинна йти – термінові справи. Було дуже приємно поспілкуватися з вами.
- Мені теж було дуже приємно.
- Сподіваюся, ми незабаром побачимося.
- Будемо сподіватися на краще.
- Побачимось!
- Побачимось!

***

- Ой! Я спізнююся. У мене зустріч з менеджером через годину.

- Нічого не поробиш (nothing doing). Щасливо!
- Я зателефоную тобі ввечері.
- Буду чекати з нетерпінням твого дзвінка. (I'll be looking forward to …)

***

- Спасибі за прекрасний вечір!
- Спасибі, що прийшли!
- Передайте привіт від мене своїм дітям і візьміть їх із собою (bring them) наступного разу.
- Спасибі, візьму обов'язково.
- До побачення.
- До побачення. Керуйте машиною обережно. (Drive safe)

5. Situation for spontaneous projects.

1. You are the head of the Ukrainian department of the ecological pressure group "Young Generation". You have a sitting of your members to decide the list of those to be invited to the jubilee meeting of your group. You send invitation and call famous ecologists to participate in your jubilee meeting. Some accept invitation, some refuse.
2. You fall in love with a student of your group. But she doesn't pay attention to you. She is busy only with the studies and researching of greenhouse gases. You tried several times to invite her to different places, but you were not successful.
3. You are at the conference on the History of ecology. Lots of scientists from different countries came to participate at the conference. During the coffee-break you get acquainted with many participants and invite them to Ukraine, Kharkiv, to visit this city and to get acquainted with ecological researches being carried out at your University.

TEST-CONTROL FOR MODULE 1

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Ecology … my favorite subject.

A) has C) was
B) are D) is

2. Ancient people … in various religions.

A) believed C) believe
B) was believed D) has been believed

3. Settler … a person who has come to live in a newly developed country.

A) are C) were
B) is D) has been

4. Water … necessary for survival.
A) were C) is
B) are D) will

5. The awareness of the ecological problems … to survey the nature for future generations.
A) helped C) was helped
B) is helping D) will help

Task II. Total 10
Translate into English

1. Екологія, як наука, почала розвиватися з часів промислової революції.
2. Я ніколи не приймав участі у міжнародній конференції з історії забруднення довкілля.
3. Людина почала руйнувати довкілля з давніх часів.
4. Населення землі зараз сягає критичного рівня.
5. Я вже прочитав розділ про ерозію ґрунту.

Task III. Total 20
Give English equivalents of the following.

1) сучасна людина
2) інтенсивне землеробство
3) швидке збільшення
4) критичний рівень
5) населення землі
6) сільськогосподарські та хатні тварини
7) кризи довкілля
8) стародавні часи
9) зростання населення
10) непоправима шкода
11) давайте тримати зв’язок.
12) час йти, вже пізно.
13) як летить час! Гадаю, мені потрібно бігти.
14) сподіваюся, ми скоро зустрінемось.
15) було приємно зустрітися.
16) мені було дуже приємно з вами поговорити.
17) боюся, мені потрібно йти.
18) на все добре!
19) не хворійте.
20) переказуйте вітання.

Task IV. Total 20

Choose the necessary word or expression to complete the following sentences.

1. In ancient Babylon garbage accumulated in the …

A) streets C) houses
B) rivers D) garbage bins

2. How to manipulate fire was discovered

A) recently C) in the 19th century
B) some centuries ago D) million years ago

3. There comes a time when not having a car becomes …

A) real C) uncomfortable
B) envy D) safe

4. Recently the ozone layer over the Poles has been …

A) depleting C) disappearing
B) damaging D) depositing

5. Butter contains a lot of …

A) pesticides C) milk
B) fat D) hydrogen

Task V. Total 20

Compose questions with proposed question-words.

1. Life expectancy has been growing in modern world. (Where…?)
2. The elephants and the buffalos almost disappeared thanks to our ancestors. (Who…? Why…?)
3. Many communities today burn down trees to clear land for growing crops. (Why…?)
4. The Dodo has no natural predators and never developed the ability to fly. (What…? Who…?)
5. Wood comes from trees. (What…?)(common)

Task VI. Total 10

Compose sentences using the following words.

1. Since, times, many, 1999, to, the, UK, has, travelling, has, she, been.
2. Man, did, modern, civilization, to development, to, damage, much, environment, the, due, the.
3. Environment, ruins, style, life, the modern, the.
4. Ancient, were, people, friendly and lived, environmentally, nature, harmony with, in.
5. Global, the, world, a, village, now, is.

Task VII. Total 10
Give 3 forms of irregular verbs and compose 5 sentences with them.

1) to be
2) to understand
3) to burn
4) to fly
5) to grow
6) to have
7) to speak
8) to leave
9) to break
10) to come

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MODULE 2
POLLUTION OF ENVIRONMENT

CURRICULUM MATERIALS FOR MODULE 2
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 2

Тема1.Види прикметників та утворення ступенів їх порівняння. Порівняльні конструкції. Прислівник.Ступені порівняння прислівників.Числівник. Словотворення. Past Tenses. Модальні дієслова та їх еквіваленти.
Тема 2. Аналітичне читання: тексти за фахом з базових підручників.
Тема 3. Усна практика: "Parting. Saying good-bye. My native town." Реферування аутентичних текстів за фахом. Діалогічне мовлення за вказаними темами. Аудіювання за темою модуля 2.Проектна робота за модулем 2.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольна робота за матеріалами модулю 2.
У результаті вивчення модуля 2 студент повинен
знати: Види прикметників та утворення ступенів їх порівняння. Порівняльні конструкції. Прислівник.Ступені порівняння прислівників.Числівник. Словотворення. Past Tenses. Модальні дієслова та їх еквіваленти.

вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 2
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 2

2.1 Unit 3. Kinds of Pollution.

If you don't think about the future,
you cannot have one.
(John Galsworthy)

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. affect (v) – вражати; впливати
2. alarm (v) – піднімати тривогу; хвилювати; тривожити
3. annoying (adj) – той, що дратує
4. auditory sensation (n) – слухове сприйняття
5. be aware of – усвідомлювати; знати
6. cause (v) – викликати; бути причиною
7. constant exposure to noise – постійний вплив шуму
8. contaminate (v) – заражати; псувати; забруднювати
9. decibel = unit for measuring relative intensities of sounds – децибел
10.dispose of (v) – видаляти; позбуватися
11.disturb (v) –тривожити; порушувати рівновагу
12.diminish (v) – зменшувати; понижувати; слабшати
13.discharge (v) – випускати, зливати, викидати
14.hit (v) – ударяти; уражати
15.leak (v) – пропускати воду; просочуватися
16.litter (n) – сміття, бруд
17.noise (n) – шум; звук
18.omnipresent=widespread (adj) – розповсюджений
19.persuade (v) –переконувати (of; in); відговорювати (from)
20.plant (n) – рослина; завод, електростанція
21.ruin (v) – руйнувати; знищувати
22.restrict (v) – обмежувати; заключати (у межі)
23.release (v) – звільняти; спускати; скидати
24.scatter (on, over) (v) – розкидати; посипати (with)
25.sewage (n) – стічні води
26.sonic pathology (n) – звукова патологія

27.spill (spilt, spilled) (v) – проливати;розсипати
28.well (n) – свердловина
29.WHO – World Health Organization

II. Vocabulary check.

Activity 1. Give English equivalents of the following.

1. забруднювати навколишнє середовище
2. не смітити
3. переконувати кинути палити
4. впливати на природу
5. видаляти пестициди
6. зливати нафту
7. отруювати воду
8. руйнувати навколишнє середовище
9. сира риба
10. викидати добрива в ріку
11. виділяти дим в атмосферу
12. шкідливий вплив на життя людини
13. озоновий шар
14. використовувати багато палива
15. порушувати баланс в живій природі

Activity 2. Match the following words with their explanations.

concern (n)	get, make, say or given again
affect (v)	causing harm
restore (v)	run over the side
external (adj)	bring back into use
spill	outside, situated on the outside
renewable	to have an influence or impression on
harmful	smth. in which one is interested or which is important
facilities	throw or put in various directions
sewage	set free
to release	quality which make things easier
to scatter	waste organic matter, etc carried off in sewers

III. Grammar review

Види прикметників та утворення ступенів їх порівняння

Види Позитивний Вищий Найвищий ступінь

прикметників	**ступінь**	**ступінь**	
1. односкладові	long	longer	the longest
	big	bigger	the biggest
	hot	hotter	the hottest
2.двоскладові	easy	easier	the easiest
прикметники:	clever	clever	the cleverest
а) що	simple	simpler	the simplest
закінчуються на-	narrow	narrower	the narrowest
y,-er,-le,-ow			
б) з наголосом	polite	politer	the politest
на другому	severe	severer	the severest
складі			
3.	beautiful	more beautiful	the most beautiful
багатоскладові	important	more important	the most important
прикметники			
4. винятки	good (хороший)	better(кращий)	the best(найкращий)
	bad (поганий)	worse(гірший)	the worst(найгірший)
	little(маленький)	less(менший)	the least(найменший)
	much,many(багато)	more(більший)	the most(найбільший)
	far(далекий)	farther(більш далекий)	the furthest, farthest (найбільш далекий)

Форми вищого та найвищого ступенів прикметників, які відрізняються за своїм значенням

Позитивний ступінь	**Вищий ступінь**	**Найвищий ступінь**
old- старий	1) older-старіший за…	1) the oldest-найстаріший
	2) elder-старший (в родині)	2) the eldest-найстарший
late- пізній	1) later- пізніший	1) the latest-найпізніший (за часом)
	2) latter-останній з двох (по порядку)	2) the last – найостанніший (по порядку)
far-далекий	1) farther - дальший (про відстань)	1) the farthest-найдальший (про відстань)
	2) further –дальший (по порядку)	2) the furthest – найдальший (по порядку)
near -близький	nearer- ближчий	1) the nearest -

найближчий
2) the next – найближчий (по порядку),наступний

Exercise 1.
Complete the descriptions. Use the comparative or superlative form of the adjective:

South of Sydney, Bondi is the … (easy) beach to reach. It has the … (wide) range of facilities, but at weekends it's … (crowded) and … (noisy) than the other beaches. South of Bondi, Tamarama is one of Sydney's … (beautiful) beaches, but also one of the … (dangerous) for swimming. For children, Cooge Beach is both … (safe) and … (suitable) than Tamarama.

There are several beaches north of Sydney. Manly is the … (accessible) and the … (good) for surfing. Palm Beach is … (far) from Sydney than Manly, and it takes … (long) to get to, so it's not surprising that it's … (peaceful) than the others.

Порівняльні конструкції

As+	Прикметник	+as	Такий самий+прикметник+як і…	This tree is as tall as that one.-Це дерево таке ж високе, як і те.
Twice as +		+as	Удвічі+прикметник у вищому ступені+ніж	This medicine is twice as effective as that one.- Ці ліки в два рази ефективніші, ніж ті.
As+		+as possible	Як можна+прикметник у вищому ступені	You must do your work as good as possible.-Ви повинні виконати свою роботу як найкраще.
Not so+		+as	Не такий+прикметник+як	This way is not so long as the way to the West.-Цей шлях не такий довгий як на захід.
The +…		…+the +	Чим+прикметник у вищому ступені, тим+прикметник у вищому ступені	The higher they rise, the thinner the air becomes.- Чим вище вони підіймаються, тим більш розрідженим стає повітря.

Exercise 2.
Work in pairs. Compare Australia, Canada, and the USA, using the facts in the table. Use the comparative or superlative form of the adjective in the box:

Example: *Washington has a lower population than Ottawa*.

big high low many small

	Australia	**Canada**	**USA**
Area (sq.km)	7.6 million	9.9 million	9.3 million
Population	17.3 million	26.8 million	308 million
Population of the capital	250,000 (Canberra)	819,263 (Ottawa)	606,900 (Washington DC)

Exercise 3.

Think of a city you know well. Describe it to your class but don't give the name. Compare it to Sydney. The class must try to guess the city.

Exercise 4.

Complete the following short texts by writing the appropriate form of the adjective or adverb and adding any other necessary words.

1. South America, the fourth (large) continent in the world, stretches from Point Gallinas on the Caribbean coast to Cape Horn,(southerly) point of Horn Island. Among its features are the Andes mountain range which, at over 7,000 kilometres, is (long) the distance from London to Bombay, the world's (high) city, La Paz in Bolivia, and one of the world's (important) resources – the Amazonian rainforest. With an area of seven million square kilometres, this is twelve times (big) than France. It is a major source of oxygen and is home to half of all known living species, including the anaconda, the world's (heavy) snake, and the two-toed sloth, (slow) animal. The continent experiences extremes of weather. Parts of Columbia are among (wet) in the world, while the Atacama Desert in Chile, which has an average of only 0.5 mm of rain a year, is (dry) place on Earth.
2. Railways have several advantages over road transport. Running on tracks, they use (little) fuel than cars or lorries and allow heavy loads to be moved (efficiently). Trains can also transport goods and passengers at (great) average speeds and with (few) hold-ups than road transport, making journeys (short) and (stressful). Rail networks are (commonly) used in Japan and Europe than in the USA, and Russia has (high) passenger railway usage of all. The (fast) scheduled train service in the world is the French TGV's 254kph journey between Massy and St Pierre.

Past Tenses.
Past Simple. Past Continuous.
Past Simple

I/ you/he/ she/ it/ we/ they **worked**
I/ you/he/ she/it/we/they/**did not work**

I/he/she/it **was** late
You/ we/ they **were late**

Did I/ you/he/she/it/ we/ they **work?**

Was I/ he/ she/ it **late?**
Were you/ we/ they late?

Вживання

1.Past Simple це форма для опису минулих подій, для вираження ряду послідовних або повторюваних дій у минулому, часто вживається зі словами: *yesterday- учора, last week- минулого тижня,the other day-на днях, і т.д.*	The standard of living in Europe went up **during the 1960s.** Ted Turner launched CNN **in 1980**.
2.Past Simple вживається для вираження дії або властивості , що характеризувала підмет у минулому.	Alexander Graham Bell **invented** the telephone.
3.У додаткових підрядних реченнях у непрямій мові, коли дієслово у головному реченні стоїть у Past Simple.	He said he didn't understand the problem.

Past Continuous (Progressive)

I **was working.** **Was I working?**
You/ we/ they **were working.** **Were** you/we/they **working?**
He/she/it **was working.** **Was** he/she/it **working?**

I **was not working.**
You/we/they **were not working.**
He/she/it **was not working.**

Вживання

1. Дія відбувалася у визначений момент у минулому.
e.g. He was working on the report all day long.
During the 1990s computer scientists were trying to deal with the millennium bug.

2. У підрядних додаткових реченнях , якщо дієслово –присудок головного речення вжито у минулому часі. Past Continuous **ч**асто вживається з дієсловами, що означають рух (to go, to come) для позначення дії, яка була майбутньою стосовно минулого.
e.g. She said she was coming to see you.

Exercise 5.
Put the verbs in brackets into the correct past forms:

Christopher Columbus … (be/born) in Italy in 1451. He … (work) as a woolen cloth weaver with his father before he … (begin) his nautical career at the age of 22. After several merchant voyages he … (settle) in Lisbon, Portugal in 1478. By this time he … (teach) himself Portuguese and Latin and … (read) many geographical and navigational books. In 1481 he … (marry) Felipa Parestrell. They … (have) one son, Diego. They … (be/married) for two years when his wife … (die). At this time he … (work) for John II of Portugal. Columbus … (always/ wish) to sail around the world westward but John II wouldn't agree. Finally King Ferdinand and Queen Isabella of Spain … (decide) to finance the voyage. He … (set off) for the first time in April 1492. There … (be) three ships: the Nina, the Pinta and the Santa Maria and a crew of 90 men. They … (have) many false alarms before they finally … (spot) the "New World" at 02.00 on Friday the 12th of October, 1492. Columbus … (make) three more voyages after this. He … (retire) to Valladolid 12 years after his first voyage and in 1517 he … (die) there.

Exercise 6.
Translate into English.

1. Олександр Великий народився у 356 році до н.е. в Македонії.
2. Він став імператором , коли йому було 20 років, і продовжив роботу, яку починав його батько.
3. У 334 році до н.е. він вторгся у Персію, а до свого тридцятиліття він вже завоював більшу частину південно-західної Азії.
4. Але, поки він планував як захопити Аравію, у нього почалася гарячка, і незабаром він помер.
5. Спеціалісти з глобального потепління зробили перші невтішні прогнози впливу зміни клімату на основні шість біологічно багатих районів світу, які займають 20% суші.
6. Дослідження в Європі, Австралії та Південній Америці показали, що види рослин і тварин, які живуть у горах, мають більші шанси вижити, тому що вони можуть перебратися вище в гори, де холодніше.
7. Вчені дійшли до висновку, що глобальне потепління підвищить температуру землі на 7ºС- 10ºС , що значно вплине на запаси продуктів харчування та води.
8. Сибірське озеро Байкал забруднювалось хімічними відходами паперово-целюлозного комбінату на протязі багатьох років, і тепер потребує захисту.
9. Грінпіс допомогла багатьом жителям Бразильських лісів зберегти свої землі.
10. Поки вони добирались додому, вони побачили великі темні хмари і через 10 хвилин пішов сильний дощ.

IV Pre-text discussion
Activity 1. Do you know that:

- Even changes in distant parts of the world and its atmosphere affect us and our environment?
- The earth's climate is expected to heat by 1 to 3.6 degrees Celsius over the next century?
- Forests are disappearing at the rate of 20 hectares a day?
- Every tree absorbs an average of 4 kilograms of carbon dioxide from the air every day?
- Every tonne of recycled newsprint – about 2000 daily papers – is equivalent to 19 trees?
- The biggest cause of air pollution is the motor car?
- 95% of Britain's river length is of good or fair quality; the European Community average is 75%?
- Level of lead in the air can be reduced by pollution control in industry and by reductions in the use of lead in petrol?

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The influence of pollution on our life.
2. Reasons of the fact that environmental pollution is becoming increasingly widespread.
3. 70% of population in Ukraine live in environmentally dangerous areas.

V. Read, translate and discuss text 3A.

Text 3A.

"Environmental pollution"

Mankind long believed that whatever we did, the Earth would remain much the same. We know now that it is untrue. Nature is under threat. One country's pollution can be every country's problem. We have a moral duty to look after our planet and hand it in good order to future generations. So we all need to work together to safeguard our environment.

Environment is everything that is external to an organism. A human being's environment includes such factors as temperature, sunlight, food supply, other people, etc.

Environmental pollution is a term that refers to all the ways by which people pollute their surroundings. People pollute the air with gases and smoke, poison the water with chemicals and other substances, and damage the soil with too many fertilizers and pesticides. People also pollute their surroundings in other various ways. For example, they ruin natural beauty by scattering junk and litter on the land

and in the water. They operate machines and motor vehicles that fill the air with disturbing noise. Nearly everyone causes environmental pollution in some way.

Environmental pollution is one of the most serious problems facing humanity today. Air, water, and soil – all harmed by pollution – are necessary to the survival of all living things. Badly polluted air can cause illness and even death. Polluted water kills fish and other marine life. Pollution of soil reduces the amount of land that is available for growing food. In addition, environmental pollution also brings ugliness to our naturally beautiful world.

People have always caused some environmental pollution. Since prehistoric times, they have put wastes in water and caused smoke by burning fuel. But early people did not live crowded together, and they had no machines that caused pollution. Thus, pollution was light and spread out over large areas.

Pollution problems first arose during ancient times, when large numbers of people began living together in cities. As cities grew, pollution grew with them.

The development of crowded industrial cities in the 1700's and 1800's made pollution a major problem. People and factories in these cities put huge amounts of pollutants into small areas. During the 1900's, urban areas continued to develop, and automobiles and other new inventions made pollution steadily worse.

Coal was used to power most of the factories and to heat most of the homes in the cities. As a result, the air over such industrial cities as London became filled with huge amounts of smoke and soot. In addition, poor sanitation facilities allowed raw sewage to get into water supplies in some cities. The polluted water caused different illnesses.

Since the 1950's, air pollution from coal burning has been greatly reduced in most parts of the world. Nearly all railroads and many industries and home heating plants now use cleaner fuels, such as oil and natural gas. In addition, many industries that still use coal have taken steps to control the pollution from their furnaces.

Despite these improvements, environmental pollution has become increasingly serious and widespread. Technological advances have helped this increase. In addition, the population of urban areas has grown. More people means more wastes of every kind.

Since the late 1960's, millions of people have become alarmed by the dangers of pollution. Dramatic environmental tragedies have pointed up the seriousness of the problem.

During the late 1970's, an explosion at a local chemical plant in Sevesco, Italy released a poisonous gas called dioxin. Hazardous chemical wastes that leaked from a former disposal site in Niagara Falls, New York, caused many families to move from homes in the area. In 1994, a leak of poisonous gas from a pesticide plant in Bhopal, India, killed over 2,000 people.

In 1986, an explosion and fire occurred at a nuclear power plant in Chernobyl, near Kiev, in Ukraine. The accident released large amounts of radioactive wastes into the atmosphere and was a real environmental tragedy.

The largest oil spill in North American waters occurred in 1989. A United States tanker hit a reef near the port of Valdez, Alaska and spilled nearly 11 million gallons (42 million liters) of crude oil into the ocean, destroying wildlife. The world's largest oil spill occurred during the Persian Gulf war (1991), when Iraq deliberately released about 465 million gallons (1.75 billion liters) of oil into the Persian Gulf. In addition, Iraq set about 650 oil wells on fire, polluting the air over Kuwait. The last oil well fire was extinguished in November 1991.

As political changes swept across Eastern Europe in 1989, concern grew about the region's environmental problems. Heavy industries there have operated without pollution controls, resulting in dying forests, polluted rivers and lakes, and serious health problems.

Everyone wants to reduce pollution. But the pollution problem is as complicated as it is serious. It is complicated because much pollution is caused by things that benefit people. For example, exhaust from automobiles causes a large percentage of all air pollution. But the automobile provides transportation for millions of people. Factories discharge much of the material that pollutes air and water, but factories provide jobs for people and produce goods that people want. Too much fertilizer or pesticide can ruin soil, but fertilizers and pesticides are important aids to the growing of crops. Thus, to end or greatly reduce pollution immediately, people would have to stop using many things that benefit them. Most people do not do that. But pollution can be gradually reduced in several ways. Scientists and engineers can work to find ways to lessen the amount of pollution that such things as automobiles and factories cause. Governments can pass and enforce laws that require businesses and individuals to stop, or cut down on, certain polluting activities. And – perhaps most importantly – individuals and groups of people can work to persuade their representatives in government, and also persuade businesses, to take action toward reducing pollution.

Groups of citizens throughout the world have formed organizations to fight pollution. Most of these organizations are concerned with local problems. But many of them also work on regional, national, and international pollution problems. Private groups are responsible for much of the action governments and industries have taken to control pollution. They call public attention to pollution problems and put pressure on government and industry officials. Each year, millions of people celebrate Earth Day on April 22. The purpose of Earth Day is to increase public awareness of environmental problems.

VI. Comprehension check

Activity 1. Do the false/true activity

1. The problem of pollution became a major one at the end of the 20^{th} century.
2. Environmental tragedies have pointed up the seriousness of the pollution problem.
3. Pollution is considered to be both a benefit and a killer.

4. The lack of pollution control has resulted in many tragedies.
5. The Earth day is celebrated on the 1st of January and only in Ukraine.
6. The pollution hasn't been stopped because of the idling of ecologists.
7. Groups of citizens have formed different social organizations to cope with pollution.
8. The largest oil spill happened in Ukraine in 1986.
9. Political changes in Eastern Europe in 1989 didn't concern the environmental problems.
10. Nearly all railroads and industries now use coal for their operation.

Activity 2. Look through text 3A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Our natural beauty is _____.
2. People pollute the air with _____.
3. Many farmers use home heating plans operation on _____.
4. The "Greens" try to persuade the governments to draw _____.
5. Poisoned fish and dirty water are of _____.
6. Pollution of soil, air, water brings harm to _____.
7. Some companies damage the soil with _____.
8. Vehicles poison the air with the _____.
9. The purpose of the "Earth Day" is to increase public _____.
10. The polluted water _____.

VII. Discussion
Activity 1. Define the logical parts of text 3A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 3A.
Activity 3. Translate in writing and reproduce.

- Does WHO consider noise pollution a big problem?
- Certainly. Nowadays noise is becoming a major pollutant. Of all forms of pollution, the most aggressive is the constant noise in the street, in the factory and even inside a building.
- What definition do the specialists give to the term of noise pollution?
- They say: «Although omnipresent, noise is a rather subjective phenomenon producing an auditory sensation considered to be annoying».
- Do they consider it to be simply a source of annoyance? Don't they think a constant exposure to noise is a potential cause of injury to one's health?
- You see, in short, we are chronically subjected to noise which usually varies between 35 and 60 decibels with occasional peaks of 90 to 100. But whether such a noise is harmful to health, no scientist has yet taken the responsibility of giving a definite or clear answer to it.
- But in what way do the specialists consider its effect harmful?

- Well, a series of investigations in the USA and Europe gave evidence that noise was a significant factor in certain affections. There doesn't appear to be any real syndrome due to noise, though it may be possible to speak of a so-called «sonic» pathology.

***

- Привіт!
- Давно тебе не бачив(ла). Як справи?
- Життя йде своїм шляхом. А як ти?
- Все добре.
- А що ти читаєш?
- Я майбутній еколог і читаю публікації про екологічні катастрофи.

***

- Які екологічні катастрофи ти знаєш?
- Що ти маєш на увазі? (What do you mean?) Катастрофи в нашій країні або в цілому світі?
- Я хотів(ла) би знати про великі катастрофи за кордоном (abroad).

***

- Ти чув(ла) про Чорнобиль?
- Так, мені розповідала мама про цю страшну катастрофу.
- А мій батько приймав участь у ліквідації цієї катастрофи.
- А коли це трапилось?
- В 1986 році вибух і пожежа трапилися на Чорнобильській атомній електростанції.
- А де це?
- Це поблизу Києва, в Україні. І це була страшна екологічна трагедія.
- Наша країна відчуває (feels) її наслідки і сьогодні, (consequences) через більш ніж 20 років.

Activity 4. Make up your own dialogues on the theme "Environmental pollution".

VIII. Skim text 3B and get ready to speak about "Kinds of pollution", namely: air pollutants, soil pollution, noise pollution, acid rains.

Text 3B.

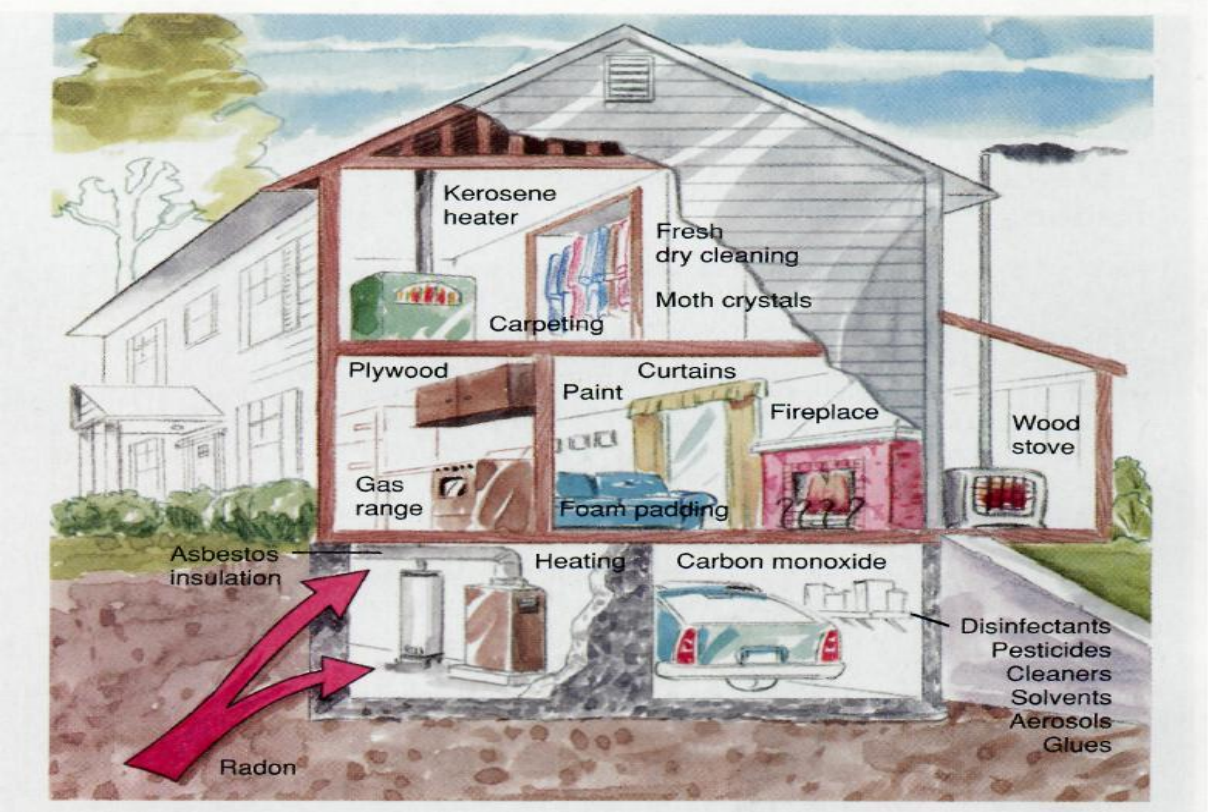
Kinds of pollution

There are several kinds of environmental pollution. They include air pollution, water pollution, soil pollution, and pollution caused by solid wastes, noise, and radiation.

All parts of the environment are closely related to one another. A kind of pollution that chiefly harms one part of the environment may also affect others.

For example, air pollution harms the air. But rain washes pollutants out of the air and deposits them on the land and in bodies of water. Wind, on the other hand, blows pollutants off the land and into the air.

Most common forms of air pollution are smog and cigarette smoke.



Sources of Indoor Air Pollution In tightly sealed modern buildings, many small sources of air pollution can become a problem.

Most of the gases and particles that people put into the air come from *combustion* (burning) processes. The furnaces in factories, homes, and office buildings; the engines in automobiles, airplanes, and other motor vehicles; and the burning of trash are the chief sources of pollution from combustion. The pollutants from these sources have a wide variety of effects, one serious result of air pollution is its harmful effect on human health. Both gases and particles harm people's eyes and irritate their lungs, worsen such respiratory diseases as asthma, bronchitis and pneumonia. In cities throughout the world, long periods of heavy air pollution dramatically increased illness and death rates.

Poisonous gases in the air can restrict the growth of and kill nearly all kinds of plants. Polluted air even harms such hard and strong materials as concrete and steel. In some cities, statues and other art objects that stood outdoors for centuries have been moved indoors because air pollution threatened to destroy them.

Air pollutants may also affect climate. Some gases, including carbon dioxide, may cause a phenomenon called the *greenhouse effect.* Carbon dioxide, like glass in a greenhouse, allows sunlight to warm the earth but prevents heat from escaping

back into space. The greenhouse effect could permanently raise temperatures on the earth, partially melting polar ice caps and causing floods.

In addition, air pollutants may damage the layer of ozone in the atmosphere. The ozone layer protects animals and plants from the sun's harmful ultraviolet light.

Most of the pollutants that people put into water come from treated and untreated sewage, from agricultural drainage, and from industrial wastes. The pollutants reduce valuable supplies of pure, fresh water by upsetting the natural cycles that work to keep water clean. By upsetting the cycles, the pollutants harm animals and plants that live in the water.

Addition of heated water to a body of water also upsets cycles. Heated water can kill animals and plants that are accustomed to living at lower temperatures. It also reduces the amount of oxygen that water can hold. The addition of heated water is called *thermal pollution.* Most heated water comes from industries and power plants that use water for cooling.

Another major pollutant is fuel oil, which enters oceans mainly from oil tankers and offshore oil wells. Such spills ruin beaches and kill birds and marine life.

Soil pollution damages the thin layer of fertile soil that covers much of the earth's land and is essential for growing food. Natural processes took thousands of years to form the soil that supports crops. But people can destroy soil in a few years.

Solid wastes are probably the most visible forms of pollution. People throw away billions of tons of solid material each year. Much of this waste litters roadsides, floats in lakes and streams, and is collected in ugly dumps. Examples of solid wastes include junked automobiles, tires, refrigerators, and stoves; cans and other packaging materials; and scraps of metal, paper, and plastic.

Solid wastes present a serious problem because most of the methods used to dispose of them result in some type of damage to the environment.

Noise pollution is a problem in urban areas. Loud noises annoy people and can cause damage to hearing. Some studies have linked loud noises with the development of high blood pressure and ulcers.

The amount of **radioactive waste** from nuclear weapons testing and nuclear power plants is increasing. Scientists are studying ways to dispose of these wastes safely and permanently.

Acid rain has become an increasingly serious problem. This pollutant forms when moisture in the air combines with nitrogen oxide and sulfur dioxide released by automobiles, by factories, and by power plants that burn coal or oil. The acids pollute lakes, streams, oceans, fish and contaminate drinking water. They also can damage crops, forests, soil, even buildings and statues. In addition, acid rain pollutants sometimes travel long distances, even from one country to another.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. Solid wastes present a serious problem.
2. Most of the pollutants come from treated and untreated sewage.
3. The acids pollute lakes, streams, oceans, fish and so on.
4. Carbon dioxide, like glass in a green house, allows sunlight to warm the earth.
5. The greenhouse effect can cause floods because of polar ice caps melting.
6. Fuel oil enters oceans mainly from oil tankers and offshore oil wells.
7. There are several kinds of environmental pollution.
8. Air pollution harms the air.
9. Smog and cigarette smoke are the most common forms of air pollution.
10. Acid rains have become an increasingly serious problem.

Activity 2. Translate into English using the dictionary.

З появою людини на планеті Земля велику роль у глобальній екосистемі стали відігравати взаємовідносини суспільства і природи. Особливо швидко посилюється вплив суспільства на природу у зв'язку з розвитком машинного виробництва.

Завдяки цьому масштаби впливу суспільства на природу поширюються так швидко , що людство поступово перетворюється у потужну геологічну силу, яка впливає на природні процеси. На всі кругообіги, що здійснюються у природі, людина прямо чи опосередковано має вплив. Під впливом антропогенних факторів відбуваються зміни у природі.

Завойовуючи природу , людство значною мірою підірвало природні умови власної життєдіяльності. Вся планета нині страждає від антропогенного тиску , він виявляється через забруднення навколишнього природного середовища, виснаження природних ресурсів і деградацію екосистем, грунтів, хижацьке винищення лісів.

До основних антропогенних забруднювачів довкілля, крім шкідливих речовин, що викидаються промисловими підприємствами, пестицидів і мінеральних добрив, що застосовуються в сільському господарстві, забруднень усіх видів транспорту , належать також транспортні та виробничі шуми, іонізуюче випромінювання, вібрації, світлові та теплові впливи.

IX. Long-term project work.
Prepare projects on the following topics.

1. Second-hand smoke and its influence on people's life quality.
2. Renewable and nonrenewable sources of energy and their perspective in Ukraine.

3. Noise pollution – the problem that has been brought into sharp focus of attention.

X. Spoken English (Every day English)

1. Remember!

Ніщо не коштує нам так дешево і не цінується так дорого, як ввічливість. Як же дякувати по-англійськи? Найпростіше сказати „Thank you" або „Thanks", але іноді хочеться та і треба вкласти більше у виявлення почуття вдячності і сказати „Ви навіть не уявляєте, як я Вам вдячний " **(You have no idea how grateful I am).**

Ну і, звичайно, ж дуже важливо слова подяки говорити щиро, дивлячись у вічі співрозмовнику.

Також зазначимо, що на відміну від, наприклад, привітань, слова подяки не треба вибирати в залежності від того, з ким ми говоримо. **Thank you** можна сказати і приятелю, і президенту США.

Але якщо подякувати багато хто вміє, то відповісти на подяку на свою адресу вміє далеко не кожний. І часто тут ми припускаємося однієї дуже грубої помилки: у відповідь на **Thank you** відповідають **Please.**

Запам′ятайте: **Please** – це будь ласка в проханні, пропозиції, пораді, але не в реакції на подяку.

- Give me your pen, please.	- Дайте мені, будь ласка, свою ручку.
- Here you are .	- Ось, візьми будь ласка.
- Thank you.	- Дякую.
- Not at all.	- Нема за що.

Not at all – це лише один спосіб відповісти на подяку.

2. Speech patterns.

Thank you very much!

Thanks a lot, thank you very much, don't mention it, you are welcome, it's a mere nothing, to be grateful

It was my pleasure	Мені було приємно допомогти
You are very welcome	Мені було приємно допомогти
You are more than welcome	Мені було приємно допомогти
It was the least I could do	Нема за що, все що міг.
Think nothing of it	Не треба дякувати
It was nothing	Не треба дякувати
Don't mention it	Нема за що
Any time	Завжди прошу

3. Dialogues and jokes to be learnt

***

- Would you like some more meat, Robert?
- Yes, thank you, it's really delicious.
- Well, thanks, I'm happy you like it. How about some more salad?
- Be so kind, please. You're a fantastic cook, Irene.
- I appreciate your compliment, but, to tell you the truth, I can cook a few things really well.
- Don't be so modest.

***

- Well, I guess I'd better be going. Thanks for the invitation. You have no idea how grateful I am for your advice.
- It was the least I could do. You're more than welcome, Alex.
- And thanks a million for your terrific apple-pie.
- Not at all. By the way here are two pieces for your kids.
- It's so kind of you. They will be happy. Thanks once more and see you again.

***

- Many thanks for inviting me to dinner, Mrs. Gray, but I'm afraid I won't be able to come.
- Oh, I'm sorry to hear that. May I ask you why?
- I have a previous commitment.
- We'll certainly miss you. Hope you'll be free next time.
- I hope so.

***

- Lots of thanks for the invitation, Bob.
- How did you like the restaurant? Is it a good place to go?
- It's a good place to go, but a terrible place to eat.

***

- Hello. Is that Mr. Green? Let me warn you that Billy Smith has a bad cold and he can't come to school.
- Thank you ever so much for warning. Who is this speaking?
- This is my father.

***

- Oh, my dear, you have no idea how grateful I am for your present!
- Did you really want to have it?
- That's just what I needed to exchange for what I wanted.

***

- Honey, thanks a lot for dinner.
- Don't mention it.
- Could you tell me what was on my plate, in case I have to describe it to the doctor.

***

(Mabel returns home from a birthday party)

- Well, Mabel, I hope you kept saying “No, thank you” more often than “Yes? thank you”.
- Yes, I did, Mum. When the hosts began saying “Aren’t you afraid to get sick of cakes and candies?”, I said: ”No, thank you” every time.

4. Translate in writing

***

- Дякую вам за чудовий обід. Все було дуже смачно. Ви чудово готуєте.
- Дякую за комплімент. Я рада, що вам сподобалось.
- Мені б дуже хотілось познайомити вас зі своєю подругою. У мене є ідея. Може, ви прийдете до мене на обід в суботу? Моя мати також непогано готує.
- Дякую за запрошення, Алекс, але у нас на цей час вже призначено зустріч.
- Дуже шкода! А як щодо (how about) наступної суботи?
- Гадаю, ми будемо вільні і прийдемо. Дуже дякую за запрошення. Дуже мило з вашого боку.

***

- Ну, мабуть я піду. Дякую за запрошення. Ви навіть не уявляєте, як я вдячний за вашу пораду.
- Не треба дякувати. Завжди вам раді.

***

- Я дуже радий, що був присутній на вашій лекції, професоре. Дякую за запрошення, лекція дуже актуальна.
- Я радий, що проблема боротьби із забрудненням повітря вас цікавить.
- Лекція була чудовою.
- Дякую за комплімент.
- Це не комплімент, так вважають усі.

5. Situation for spontaneous projects.

1. You are present at the birthday party of your friend. It’s time to part. You thank the hostess and all the quests present for the party, for communicating, for the interesting party.
2. We are at the concert with your friend who insisted on your attending this concert. The concert was wonderful. Your friend is seeing you off and you thank him for the concert, for the pleasure you received at the concert.

TEST/REVIEW

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Ecology … my favorite subject.

A) has C) was

B) are D) is

2. Ancient people … in various religions.
A) believed C) believe
B) was believed D) has been believed

3. Settler … a person who has come to live in a newly developed country.
A) are C) were
B) is D) has been

4. Water … necessary for survival.
A) were C) is
B) are D) will

5. The awareness of the ecological problems … to survey the nature for future generations.
A) helped C) was helped
B) is helping D) will help

Task II. Total 10

Translate into English

1. Екологія, як наука, почала розвиватися з часів промислової революції.
2. Я ніколи не приймав участі у міжнародній конференції з історіі забруднення довкілля.
3. Людина почала руйнувати довкілля з давніх часів.
4. Населення землі зараз сягає критичного рівня.
5. Я вже прочитав розділ про ерозію ґрунту.

Task III. Total 20

Give English equivalents of the following.

1. сучасна людина
2. інтенсивне землеробство
3. швидке збільшення
4. критичний рівень
5. населення землі
6. сільськогосподарські та хатні тварини
7. кризи довкілля
8. стародавні часи
9. зростання населення
10. непоправима шкода
11. давайте тримати зв’язок.
12. час йти, вже пізно.
13. як летить час! Гадаю, мені потрібно бігти.
14. сподіваюся, ми скоро зустрінемось.

15) було приємно зустрітися.
16) мені було дуже приємно з вами поговорити.
17) боюся, мені потрібно йти.
18) на все добре!
19) не хворійте.
20) переказуйте вітання.

Task IV. Total 20
Choose the necessary word or expression to complete the following sentences.

1. In ancient Babylon garbage accumulated in the …
A) streets C) houses
B) rivers D) garbage bins

2. How to manipulate fire was discovered
A) recently C) in the 19th century
B) some centuries ago D) million years ago

3. There comes a time when not having a car becomes …
A) real C) uncomfortable
B) envy D) safe

4. Recently the ozone layer over the Poles has been …
A) depleting C) disappearing
B) damaging D) depositing

5. Butter contains a lot of …
A) pesticides C) milk
B) fat D) hydrogen

Task V. Total 20
Compose questions with proposed question-words.

1. Life expectancy has been growing in modern world. (Where…?)
2. The elephants and the buffalos almost disappeared thanks to our ancestors. (Who…? Why…?)
3. Many communities today burn down trees to clear land for growing crops. (Why…?)
4. The Dodo has no natural predators and never developed the ability to fly. (What…? Who…?)
5. Wood comes from trees. (What…?)(common)

Task VI. Total 10

Compose sentences using the following words.
1. Since, times, many, 1999, to, the, UK, has, travelling, has, she, been.
2. Man, did, modern, civilization, to development, to, damage, much, environment, the, due, the.
3. Environment, ruins, style, life, the modern, the.
4. Ancient, were, people, friendly and lived, environmentally, nature, harmony with, in.
5. Global, the, world, a, village, now, is.

Task VII. Total 10
Give 3 forms of irregular verbs and compose 5 sentences with them.

1. to be
2. to understand
3. to burn
4. to fly
5. to grow
6. to have
7. to speak
8. to leave
9. to break
10) to come

2.2 UNIT 4. Air pollution

"Me, Edward I of England ban the burning of sea coals in London"
Edward I, 1306

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. ability (n) – здатність, можливість
2. accept (v) – приймати, допускати
3. acid(n) – кислота
4. attach (v) – прикріплювати, прикладати
5. burn (v) – горіти, згорати
6. compose (v) – складати
7. constitute (v) – складати
8. converter (n) – конвертор, перетворювач
9. disperse (v) – звільняти, розподілювати
10.expose (v) – піддавати, виставляти
11.headache (n) – головний біль
12.identify (v) – впізнавати, упізнавати, розпізнавати
13.impaired (adj) – уповільнений, послаблений
14.incorporate (v) – з′єднувати, містити

15.inoperable (adj) – непрацюючий ,неоперабельний
16.irritate (v) – дратувати, викликати запалення
17.lead (n) – свинець
18.mixture (n) – суміш
19.persistent (adj) – наполегливий
20.quality (n) – якість
21.quantity (n) – кількість
22.range (v) – діапазон
23.reduce (v) – зменшувати, скорочувати
24.release (v) – звільняти, позбавляти, випускати
25.smelt (n) – плавлення, розплавлення
smelt (v) – плавити, розплавити
26.tissue (n) – тканина
27.trash (n) – покидь, мотлох, сміття, макулатура
28.vapor (n) – пара
29.troposphere (n) – тропосфера
30.molecule (n) – молекула
31.evidence (n) – доказ
32.weather (v) – вивітрювати
33.adverse (adj) – шкідливий, несприятливий

II. Vocabulary check.
Activity 1. Give Ukrainian equivalents of the following.

1. smelting ore
2. internal combustion engine
3. blurred vision
4. oxygen-carrying capacity
5. living structure
6. pull of gravity
7. fuel efficiency
8. catalytic converter
9. automobile traffic
10.metropolitan areas
11.indoor and outdoor
12.pollutants

Activity 2. Read and memorize special terms.

Dioxide, carbon dioxide, carbon monoxide, hydrocarbons, particulates, nitrogen, lead, asbestos, monoxide, toxics, fossil fuels, nitrogen oxide, nitrogen dioxide, chlorofluorocarbons, asbestos, formaldehyde, chloroform, perchloroethylene, paradichlorbensene.

Activity 3. Give English terms to the following:

NO; NO_2; O_2; SO_2; CO; N_2, CH_2O, CFC_z.

Activity 4. Match the following words with their explanations.

converter	having leant the ways of the world and having lost natural simplicity
to maintain	to breathe in and out
to respire	a device changing from one form, use, etc into another
sophistication	to keep up, retain, continue
persistent	to bring to and end
to evaporate	already used in industry so that further use is possible
to reduce	to allow to go, to set free
to recycle	cause to change into vapour
to complete	refusing in spite of argument, opposition, failure
to release	to make less, make smaller in size, number

III. Grammar review

Modals. Модальні дієслова.

До модальних належать такі дієслова: can (could), may (might), must, need, ought to, to have to,та інші. Вони вживаються у сполученні з інфінітивом іншого дієслова і означають не саму дію, а лише ставлення до неї того, хто говорить.

Особливості модальних дієслів:

Не змінюються за особами, числами;

Не мають безособових форм – інфінітива, герундія , дієприкметника;

Не мають часових форм ;

Після модальних дієслів інфінітив вживається без частки to (за винятком дієслова ought);

Модальні дієслова не мають закінчення у третій особі однини.

Питальна та заперечна форми утворюються без допоміжного дієслова

Модальні дієслова та їх еквіваленти

Модальне дієслово	**Значення**	**Приклад**
can	1.можу, умію	1.She can do it.

could	2.можливо(з Perf.Inf.y ствердж увальних реченнях)	2.She can have done it.
	3.невже (у питальних реченнях)	3.Can she do (have done) it?
	4.не може бути(в заперечних реченнях)	4.She can't do (have done) it.
to be able (to)	бути в змозі	She will be able to do it**.**
may	1.можна(просьба-у	1. May I come in?
might	питальних реченнях), дозвіл (у ствердж увальних реченнях)	2.You may take the book.
	2.можливо	3.She may do (have done) it.
to be allowed (to) to be permitted (to)	мати дозвіл	He was permitted to go there.
must	повинен	She must do it.
	напевно	She must do (have done) it.
to have (to)	повинен із-за обставин,	She has to do it.
to be (to)	плану	She is to do it.
need	потрібно	The plants need watering.
shall (should)	повинен	Shall I apply for the job?
		They should have warned us.
will (would)	просьба, пропозиція	Will you give me a hand?
		Would you mind helping me?
ought (to)	обов'язок	People ought to live in peace.

Exercise 1.
Match the personal qualities on the left with the abilities on the right:

If you	**you can**
1. are computer literate	a) work well on your own
2. are trilingual	b) use different types of software
3. are good at mental arithmetic	c) solve problems rationally
4. are autonomous	d) be a good leader
5. have a creative personality	e) calculate quickly in your head
6. have a logical mind	f) speak three languages
7. are decisive and people accept your	g) bring new ideas to projects

authority

Exercise 2.
Complete the sentences using either "could" or "managed to":

1. After a lot of discussion we …… strike a deal.
2. He was a brilliant ecologist and …… speak over a dozen languages fluently.
3. I thought I was going to miss the plane but I …… get to the airport on time.
4. When I was younger I …… run several kilometres without feeling tired.
5. She …… to find a good job despite her lack of formal qualifications.
6. When we lived near the beach we …… go swimming every day.
7. She …… have left me a message – how was I supposed to know?

Exercise 3.
React to these situations using "could have":

1. Why didn't she ring me up to tell me she would be late?
2. She had the facts and figures but left me in the dark.
3. It wasn't worth us taking a taxi, the station was within walking distance.
4. It took six days for the letter to arrive and we both have e-mail.

Exercise 4.
Complete these sentences so that they are true for your country. Use "have to", "don't have to" and " must":

1. You …… carry a gun.
2. You …….. pay to use buses and trams.
3. You …… vote if you are over 18.
4. You …… drink alcohol at work.
5. You ……pay to drive on a motorway.
6. You ……wear a seat belt when driving a car.

Exercise 5.
This text deals with the likelihood of an earthquake in the San Francisco area. Decide where each of the phrases (a-h) fits into the passage:

The next big earthquake in the Bay area may come sooner than you think. There is a 67 percent chance of at least one earthquake of magnitude 7 or larger in the San Francisco Bay area between now and 2020. Such an earthquake ……(1).

Some scientists believe that the 67 percent probability estimate ……(2). They have noted several instances of pairs of earthquakes of magnitude 6.5 or larger in northern California, and they are concerned that the Loma Prieta earthquake ……(3). Other fault segments in northern California ……(4).Therefore it seems prudent to consider the 67 percent chance of a large

earthquake within the next 20 years as a minimum estimate. Future studies are also likely to change. Scientists agree that:

*Earthquakes of magnitude 7 and larger are highly likely within the bay area during the next few decades.

- Each of these events …… (5) because each will probably be located closer to densely populated areas.
- Action is needed now to reduce the damage and the number of deaths that …… (6) even if this …… (7).

a) might also be capable of producing large earthquakes
b) may be too low
c) could cause more damage than the Loma Prieta quake
d) will result in changes in probability estimates
e) could strike at any time, including today
f) could be the first quake of such a pair
g) may involve significant expense
h) could result from future major earthquakes

Exercise 6.

Decide whether the following are requests for permission, suggestions or offers:

1. Shall we go for lunch?
2. May I sit here?
3. Shall I give you a lift into town?
4. Can I borrow the car this weekend?
5. Could I use your mobile phone?
6. You might like to check the exchange rate first.
7. Would you like us to send you a catalogue?
8. In my opinion you should sell your shares now.
9. Are you hot? I'll switch on the air conditioning if you like.

Exercise 7.

Translate into English:

1. Викиди парникового газу повинні скоротитись на 20% до 2020 року.
2. Грінпіс вважає, що Великобританія повинна зменшити викиди в атмосферу шкідливих газів.
3. Всі 27 країн Євросоюзу повинні досягти 10% використання біопалива для потреб транспорту до 2020.
4. Навіть невелика кількість CO^2 у повітрі може викликати сонливість, головний біль, запаморочення.
5. Крига в Арктиці швидко розтає , і в цьому винуваті люди.
6. Всі екологічні проблеми взаємозв'язані, і вони повинні вирішуватись державою.
7. У нього так багато книжок. Він, очевидно, любить читати.

8. Він не міг одержати листа в неділю. В неділю пошта не працює.
9. Вам краще зробити цю роботу сьогодні.
10.Я не дуже ретельно готувався до екзамену, хоча мені було слід працювати більше.

IV Pre-text discussion

Activity 1. Do you know that:

- The atmosphere or air is composed mostly of nitrogen.
- Most of the atmosphere is held close to the earth by the pull of gravity.
- The content of the atmosphere changes with the distance from the earth's surface.
- Troposphere is the layer of the air we breathe.
- The primary air pollutant is carbon monoxide.
- Air pollutants cause a variety of health problems.
- The lower part of the atmosphere contains a band of warm gas called the ozone layer.
- The ozone layer is the layer between 15 and 40 kilometers above sea level.
- The man-made chemical chlorofluorocarbon (CFC_z) breaks up ozone molecules.
- The stratosphere (between 15-80 kilometers above sea level) contains thin cold air with no dust or water vapor.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

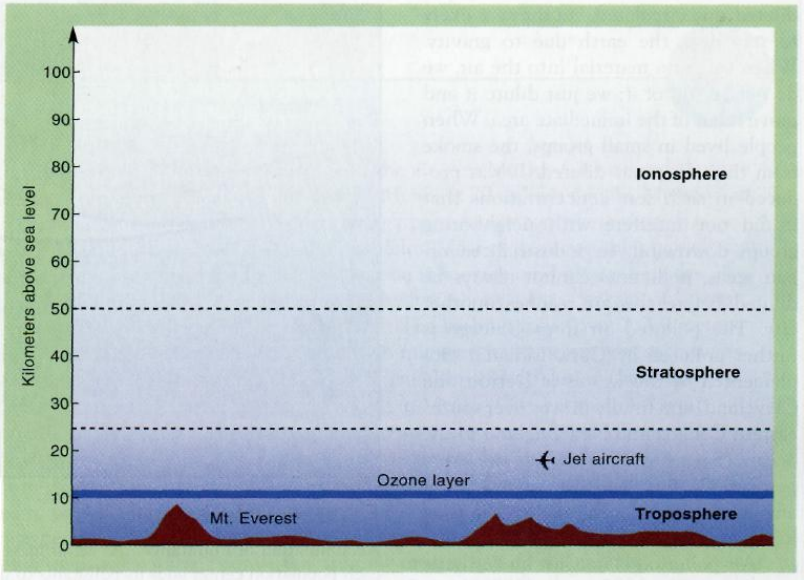
1. The atmosphere and the air are different (layers) things.
2. A mixture of sulfur and nitrogen dioxide is called sulfur dioxide.
3. The primary source of nitrogen oxide is the vehicle.

V. Read, translate text 4A.

Text 4A.

"The Atmosphere"

The atmosphere is the layer of gas that surrounds the earth. The composition of the atmosphere changes with the distance from the earth's surface. The layer near the surface – the troposphere – contains the air we breathe.



The Atmosphere.
The atmosphere is divided into the troposphere, the relatively dense layer of gases close to the surface of the earth; the stratosphere, more distant with similar gases but less dense; and the ionosphere, composed of ionized gases.

The atmosphere is normally composed of 79 percent nitrogen, 20 percent oxygen, and 1 percent mixture of carbon dioxide, water vapor, and small quantities of several other gases. Most of the atmosphere is held close to the earth by the pull of gravity, so it gets thinner with increasing distance from the earth.

The atmosphere has a tremendous ability to accept and disperse pollutants. Carbon monoxide, hydrocarbons, particulates, sulfur dioxide, and nitrogen compounds are the primary air pollutants. They can cause a variety of health problems. Lead and air toxics have also been identified as significant air pollutants.

Table 1
Sources of Primary Air Pollutants

Pollutant	Sources
Carbon monoxide	Incomplete burning of fossil fuels
	Tobacco smoke
Hydrocarbons	Incomplete burning of fossil fuels
	Tobacco burning
	Chemicals

Particulates	Burning fossil fuels
	Farming operations
	Construction operations
	Industrial wastes
	Building demolition
Sulfur dioxide	Burning fossil fuels
	Smelting ore
Nitrogen compounds	Burning fossil fuels

Carbon monoxide (CO) is produced when organic materials, such as gasoline, coal, wood, and trash, are incompletely burned. The single largest source of carbon monoxide is the automobile. Although increased fuel efficiency and the use of catalytic converters have reduced carbon monoxide emissions per kilometer driven, carbon monoxide remains a problem because the number of automobiles and the number of kilometers driven have increased. In many parts of the world, automobiles are poorly maintained and may have inoperable pollution control equipment, resulting in even greater amounts of carbon monoxide.

Carbon Monoxide The major source of carbon monoxide, hydrocarbons, and nitrogen oxides is the internal combustion engine, which is used to provide most of our transportation. The more concentrated the number of automobiles, the more concentrated the pollutants. Carbon monoxide concentrations of a hundred parts per million are not unusual in rush-hour traffic in large metropolitan areas. These concentrations are high enough to cause fatigue, dizziness, and headaches.

The next largest source of carbon monoxide is smoking tobacco. Smoking is decreasing in the industrialized world today, but in the developing nations, smoking retains its image of glamour and sophistication as a result of extensive marketing campaigns by cigarette companies.

Several hours of exposure to air containing 0.001 percent of carbon monoxide can cause death. Because carbon monoxide remains attached to hemoglobin for a long time, even small amounts tend to accumulate and reduce the blood's oxygen-carrying capacity. The amount of carbon monoxide produced in heavy traffic can cause headaches, drowsiness, and blurred vision. A heavy smoker in congested traffic is doubly exposed and may experience severely impaired reaction time compared to nonsmoking drivers.

Fortunately, carbon monoxide is not a persistent pollutant. Natural processes convert carbon monoxide to other compounds that are not harmful. Therefore, the air can be cleared of its carbon monoxide if no new carbon monoxide is introduced into the atmosphere.

Hydrocarbons (HC)

In addition to carbon monoxide, automobiles emit a variety of hydrocarbons (HC). Hydrocarbons are a group of organic compounds consisting of carbon and hydrogen atoms. They are either evaporated from fuel supplies or are remnants of fuel that did not burn completely. The internal combustion engine is the major source of hydrocarbons, although refineries and other industries add hydrocarbons to the total atmospheric burden. Hydrocarbons in the atmosphere are no great problem. Most of them are washed out of the air when it rains and run off into surface water. They cause an oily film on surface, but hydrocarbons do not generally cause more than nuisance problems, except when they react to form secondary pollutants.

Many modifications to automobile engines have reduced the loss of hydrocarbons to the atmosphere. Recycling some gases through the engine, using higher oxygen concentrations in the fuel-air mixture, and using valves to prevent the escape of gases are three of these modifications. In addition, catalytic converters burn exhaust gases more completely so that fewer hydrocarbons leave the tail pipe.

Particulates, small pieces of solid materials dispersed into the atmosphere, constitute the third largest category of air pollutants. Smoke particles from fires, bits of asbestos from brake linings and insulation, dust particles, and ash from industrial plants contribute to the particulate load. Particulates cause problems ranging from the annoyance of soot settling on a backyard picnic table to the carcinogenic (cancer-causing) effects of asbestos.

Particulates can accumulate in the lungs and interfere with the ability of the lungs to exchange gases. However, this lung damage usually happens to people who are repeatedly exposed to large amounts of particulate matter on the job. Miners and others who work in dusty conditions are most likely to be affected. For most of the population, particulates affect health by acting as centers for the deposition of moisture and gases from the atmosphere.

Sulfur Dioxide ($S0_2$) is a compound of sulfur and oxygen that is produced when sulfur-containing fossil fuels are burned. Coal and oil were produced from organisms that had sulfur in their living structure. When the coal or oil was formed,

some of the sulfur was incorporated into the fossil fuel. The sulfur is released as sulfur dioxide when the fuel is burned. Sulfur dioxide has a sharp odor and irritates respiratory tissue. It also reacts with water, oxygen, and other materials in the air to form sulfur-containing acids. The acids can become attached to particles, which, when inhaled, are very corrosive to lung tissue.

Oxides of nitrogen (NO and $N0_2$) are the fifth category of primary air pollutants. Several compounds contain nitrogen and oxygen in different combinations; nitrogen oxide (NO) and nitrogen dioxide ($N0_2$) are the most common. When combustion takes place in air, nitrogen and oxygen molecules from the air may react with each other, and oxides of nitrogen result:

$N_2 + O_2 \rightarrow 2NO$ (nitrogen oxide)

$2NO + O_2 \rightarrow 2NO$ (nitrogen dioxide)

A mixture of nitrogen oxide and nitrogen dioxide is called NO_x. The nitrogen dioxide in the mixture reacts with other compounds to produce photochemical smog.

The primary source of nitrogen oxides is the automobile engine. Catalytic converters reduce the amount of nitrogen oxides released from the internal combustion engine, but increased automobile traffic has resulted in significant NOx levels in many metropolitan areas.

VI. Comprehension check

Activity 1. Do the false/true activity

1. The air we breathe consists mainly of oxygen.
2. The air is thinner in the ionosphere than in the stratosphere.
3. Nowadays there are fewer products containing chlorofluorocarbons.
4. The main source of nitrogen oxide is the automobile engine.
5. Catalytic converters increase the amount of nitrogen oxide from the internal combustion engine.
6. Sulfur dioxide is a compound of sulfur and hydrogen.
7. Particulates are small pieces of solid materials dispersed into the atmosphere.
8. A mixture of nitrogen oxide and nitrogen dioxide is called NO.
9. Particulates can’t accumulate in the lungs.
10. Particulates affect man’s health by depositing moisture and gases from the atmosphere.

Activity 2. Look through text 4A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. The layer near the surface is _____.
2. Many modifications to automobile engines have reduced the loss _____.
3. The air can be cleaned of carbon monoxide if no new carbon monoxide is _____.

4. Carbon monoxide, hydrocarbons can cause _____.
5. Catalytic converters burn exhaust gases more completely so that fewer hydrocarbons _____.
6. The sulfur is released as sulfur dioxide when _____.
7. The next largest source of carbon monoxide is _____.
8. The atmosphere has an ability to accept and disperse _____.

VII. Discussion

Activity 1. Define the logical parts of text 4A entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 4A.

Activity 3. Translate in writing and reproduce.

- Здрастуйте!
- Здрастуйте!
- Я був присутній на вашій лекції з зовнішніх і внутрішніх забруднень. Мені дуже сподобалась ця лекція.
- Радий чути вашу думку. Я дуже ціную ваш комплімент.
- Це не комплімент, я так вважаю.

***

- Які внутрішні забруднення шкідливо впливають на здоров'я людини? Хто може відповісти на це питання?
- Можна? До цих забруднень відносяться речовини, які містять азбест, формальдегід, формалін.
- Цілком вірно! Які ще речовини шкідливі?
- Це споживчі товари, в тому числі вироби з деревини, аерозолі, пестициди, хлороформ.
- Добре.

***

- Що ти робиш?
- Я готуюсь до семінару, який відбудеться завтра.
- А які питання ви будете розглядати на семінарі?
- Багато різноманітних питань з теми „Атмосфера", але мені не зрозуміло питання про токсини в повітрі. Ти можеш мені допомогти?
- Із задоволенням. я вже склав цей матеріал. Слухай! Токсини повітря – це шкідливі хімічні речовини, які потрапляють до атмосфери.
- А як вони туди потрапляють?
- Випадково або цілеспрямовано. Випадково – це в результаті витоку або невірно спроектованого виробничого процесу.
- Зрозуміло. А які речовини потрапляють цілеспрямовано?
- А. Це пестициди, які призначені для того, щоб вбивати комах або шкідників сільськогосподарських рослин.
- Дякую! Ти мені дуже допоміг.

- Будь ласка. Бажаю тобі гарно виступити на семінарі.

Activity 4. Make up your own dialogues on the theme "Air pollution".

VIII. Skim text 4B and get ready to speak about the most important pressure and interest groups protecting the environment.

Text 4B.

Other Significant Outdoor and Indoor Air Pollutants.

In recent years, two other air pollutants have been recognized as significantly affecting the health and welfare of people: lead and toxic chemicals. The primary sources of lead are gasoline and paint. For many years lead was added to gasoline to help engines run more effectively. Recognition that lead emissions were hazardous resulted in the lead additives being removed from gasoline in North America and Europe. This has resulted in a decline in the amount of lead in the atmosphere. However, most other countries in the world still use leaded gasoline.

Another major source of lead is paints. Many older homes have paints that contain lead, since various lead compounds are colorful pigments. Dust from flaking paint or remodeling or demolition is released into the atmosphere. Although the amount of lead may be small, its presence in the home can result in significant exposure to inhabitants, particularly young children who chew on painted surfaces and often eat paint chips.

Air toxics are harmful chemicals that are released into the atmosphere on purpose or are released accidentally as a result of leaks or poorly designed manufacturing processes. Materials such as pesticides are purposely released to kill insects or other pests. However, the majority of air toxics are released as a result of manufacturing processes. Although air toxics are important to the entire public, they are most critical for people who are exposed on the job since they are likely to be exposed often and to higher concentrations. There are literally hundreds of different air toxics.

Indoor Air Pollution

A growing body of scientific evidence indicates that the air within homes and other buildings can be more seriously polluted than outdoor air in even the largest and most industrialized cities. Many indoor air pollutants and pollutant sources are thought to have an adverse effect on human health. These pollutants include asbestos; formaldehyde, which is associated with many consumer products, including certain wood products and aerosols; airborne pesticide residues; chloroform; perchloroethylene (associated particularly with dry cleaning); paradichlorbenzene (from mothballs and air fresheners); and many disease-causing microorganisms. Smoking is the most important air pollutant source in the United States in terms of human health. The Surgeon General estimates that 350,000 people in this country die each year from emphysema, heart attacks, strokes, lung

cancer, or other diseases caused by tobacco smoking. Banning smoking probably would save more lives than would any other pollution-control measure.

A recent contributing factor to the concern about indoor air pollution is the weatherizing of buildings to reduce heat loss and save on fuel costs. In most older homes, there is a complete exchange of air every hour. This means that fresh air leaks in around doors and windows and through cracks and holes in the building. In a weatherized home, a complete air exchange may occur only once every five hours. Such a home is more energy efficient, but it also tends to trap air pollutants.

Even though we spend almost 90 percent of our time indoors, the movements to reduce indoor air pollution lag behind regulations governing outdoor air pollution. In the United States, the Environmental Protection Agency is conducting research to identify and rank the human health risks that result from exposure to individual indoor pollutants or mixtures of multiple indoor pollutants.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. Many indoor air pollutants have an adverse effect on human life.
2. In a weathered home a complete air exchange may occur once every five hours.
3. The primary sources of lead are gasoline and paint.
4. Smoking is the most important air pollutant source in the US in term of human health.
5. Air toxics are harmful chemicals released into atmosphere on purpose.
6. Majority of air toxics are released as a result of vehicle' emission.
7. The movements to reduce indoor air pollution lag behind regulations governing outdoor air pollution.
8. Pesticides are purposely released to kill insects or other pets.
9. One of the major sources of lead is paints.
10. There are hundreds of different air toxics.

Activity 2. Translate into English using the dictionary.

Атмосфера завжди містить певну кількість домішок, котрі зумовлюються природними та антропогенними джерелами. До числа домішок, котрі виділяються природними джерелами, належать: пил (рослинного, вулканічного, космічного походження, внаслідок ерозії грунту , частинки морської солі, тощо), туман, дим, гази від лісових та степових пожеж, гази вулканічного походження, різноманітні продукти рослинного, тваринного та мікробіологічного походження.

Ще п’ятдесят років тому природа досить успішно боролася з різноманітним забрудненням, оскільки атмосфера має могутні властивості самоочищення, але нині вона з цим завданням вже не справляється.

Основна маса забруднень повітря припадає на спалювання органічних енергоносіїв (вугілля, нафти, газу, торфу, сланців, деревини), у містах до 60% забруднень дає автотранспорт. Забруднення повітря стало великою соціальною й економічною проблемою для багатьох розвинених країн, особливо для великих міст , промислових агломератів. Сьогодні в містах забруднення повітря в 15 разів вище, ніж над океаном. У промислових районах за добу випадає понад 1 тонну пилу на 1 км², у забруднених містах за рік – більше 1 кг/м² пилу і сажі.

IX. Long-term project work.
Prepare projects on the following topics.

1. Indoor and outdoor pollutants having harmful influence on health.
2. Alternative engines – the way of nitrogen oxides reduction.

X. Spoken English (Every day English)

1. **Remember!**

Ви наступили на ногу комусь в автобусі. Ви образили людину і розкаюєтесь в цьому. Ви перервали бесіду і почуваєтесь незручно. Природно, у всіх цих та багатьох інших випадках слід вибачитися. Як це зробити? Легше за все сказати **I’m sorry**, але не завжди цього буває досить. Випадково штовхнувши перехожого на вулиці, можна обмежитися наступними фразами:

I’m sorry. Sorry. Pardon me.

Правда, можна собі уявити ситуацію, коли від вашого поштовху перехожий впав у калюжу. У такому випадку доведеться бути більш красномовним, наприклад:

Oh, I’m sorry. I was so clumsy. Let me help you to clean your jacket.
О, пробачте мені. Я був такий незграбний.
Давайте я допоможу вам відчистити костюм.

Тож запасайтеся „штампами” вибачень на всі випадки життя.

I beg your pardon.	Прошу вибачення
Pardon me, please.	Пробачте мені, будь ласка
I hope you’ll forgive me.	Сподіваюсь, ви мені пробачите
Excuse me for…	Вибачте мені за...
I apologize for…	Я прошу вибачення за...
I’m awfully sorry.	Я дуже завинив
I won’t let it happen again	Це не повториться
I’ll be more careful next time	Наступного разу я буду обережнішим

А тепер уявіть собі, що всі ці неприємності трапилися з вами з чиєїсь вини. Вибачення принесені,і треба щось відповісти. Я сподіваюсь, що всі ви добрі люди, тому зосереджусь на способах прийняття вибачень.

2. Speech patterns.

Excuse me.

That's quite all right	Усе в порядку
Think nothing of it	Не звертайте уваги
Don't worry about it	Не хвилюйтесь
No harm done	Нічого не трапилось
Forget it	Забудьте про це
No problem	Нема проблем
No big thing	Дурниці
I won't let it happen again	Я більше так не буду
Pardon me, please	Вибачте, будь ласка
I am really very sorry to leave	Мені так не хочеться йти
I am very sorry to say it	Мені так не хочеться говорити це
Don't trouble to see me to the door	Не турбуйтесь і не проводжайте мене до дверей
I forgive you	Я тебе пробачаю
I hope you'll forgive me	Я сподіваюсь, що ти мені пробачиш
Oh, think nothing of it	О, пусте
It's a mere nothing	дурниці

quite, nothing of it, problem, worry, harm, anyway, trouble,
to be sorry, pardon, forgive, forget.

3. Dialogues and jokes to be remembered

***

- Oh, excuse me, sir! I'm so clumsy! I'll get you something to clean your coat right away
- No great harm done. Don't worry. I hope it doesn't stain.
- If it does, please phone me. I'll have your coat dry-cleaned. This is my phone number.
- Well, thanks. Take it easy.

***

- Helen, let me tell you something. I borrowed your dictionary and lost it.
- Forget it. I have a newer and better one. But next time would you mind telling me when you borrow something.
- I won't let it happen again.
- Don't worry about it. It's all right.

***

- Could you get the tickets?
- I'm really sorry, Linda, but I couldn't.
- You don't have to apologize. Next time I won't ask you so late. Thanks anyway.

***

- How many times I told you not to be late for classes?
- I hope you'll forgive me, sir, but I don't know. I thought you were keeping the score.

***

- Doctor, I'm terribly sorry to drag you so far on such a bad night.
- Oh, that's quite all right. I have another patient near here, so I can kill two birds with one stone.

***

- I beg your pardon, but Mrs. Smith can't accept you this morning.
- What did she say?
- Sorry, but she said to tell you she was not at home.
- Oh, think nothing of it, just tell her I'm glad I didn't come.

***

- Pardon me ,please, for being late.
- Anything happened?
- There are eight people in my family and the alarm-clock was set for seven.

***

- I'm really very sorry to leave. Don't trouble to see me to the door.
- It's no trouble, it's a pleasure.

***

- Excuse me, Mum, for breaking Dad's pipe. I'm so sorry about it.
- Have you told Dad yet?
- I have.
- What did he say?
- Shall I leave out the naughty words?
- Certainly.
- He said nothing.

4. Translate in writing

***

Пам′ятаєте, у А.П. Чехова є оповідання „Смерть чиновника" про те, як Іван Дмитрович Червяков ненароком чхнув на лисину генерала Бризжалова і вивів його з себе своїми багаточисельними вибаченнями? Спробуйте перекласти на англійську мову діалог, який може служити в якості вільного переказу цієї кумедної і в той же час сумної історії.

***

- Вибачте, я не навмисно...

- Нічого, нічого.
- Заради бога, вибачте, я ж не хотів.
- Я вже забув, а ви все про те саме.
- Вибачте, я був такий незграбний!
- Дрібниці.
- Більше таке ніколи не повториться.
- Забудьте про це. Нічого страшного не трапилось.
- Я буду більш обережним наступного разу.
- Ви що, смієтесь наді мною?
- Я дійсно винуватий...
- Пішов геть! (Get out!)

***

- Хелен, я повинна тобі щось сказати.
- Я взяла твою ручку і загубила її.
- Забудь про це. У мене є краща і новіша. Але наступного разу, будь ласка, говори мені, якщо ти що-небудь береш.
- Я більше так не буду.
- Не переймайся, все гаразд.

***

- Ти можеш дістати білети на новий спектакль?
- Вибач, але я не зможу.
- Не вибачайся. У будь-якому разі, дякую.

5. Situation for spontaneous projects.

1. Вас запросили у гості. Вечірка у розпалі. Поряд із вами сидить цікава дівчина. Ви наливаєте їй келих вина та проливаєте вино на білосніжну скатертину та чудову сукню незнайомки. Треба вибачитися, але як?
2. Вас запросив до театру юнак, який Вам дуже подобається. Він чекає на Вас біля театру, але Ви запізнюєтесь. Вистава вже почалась, а ваші місця в середині ряду.
3. Пам′ятаєте, у А.П. Чехова є оповідання „Смерть чиновника” про те, як Іван Дмитрович Червяков ненароком чхнув на лисину генерала Бризжалова і вивів його з себе своїми багаточисельними вибаченнями? Як же цей діалог буде звучати англійською мовою, який є вільним переказом цієї кумедної та водночас сумної історії?

TEST-CONTROL FOR MODULE 2

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Many modifications to automobile engines … to reduce the emission of hydrocarbons into the atmosphere.

A) must C) might
B) can D) have

2. Particulates … accumulate in the lungs.
A) must C) can
B) have to D) am to

3. Several hours of exposure to air containing 0.001 percent of carbon monoxide … cause death.
A) have to C) might
B) is to D) can

4. He was a brilliant ecologist and … speak over a dozen of languages fluently.
A) was to C) could
B) can D) had

5. The next big earthquakes in the Bay area … come sooner than you think.
A) may C) will
B) might D) should

Task II. Total 20
Use the correct form of the adjectives.

1. NO
2. NO_2
3. O_2
4. SO_2
5. CO
6. N_2
7. CH_2O
8. CFC_2
9. HC
10. H_2O

Task III. Total 20
Give English equivalents of the following.

1. Сила тяжіння
2. Склад повітря
3. Приймати та виділяти забруднювачі
4. Проблеми із здоров'ям
5. Значне забруднення навколишнього середовища
6. Органічні матеріали

7. Каталітичний конвертор
8. Обладнання для контролю за рівнем забруднення
9. Інтенсивний дорожній рух
10. Живі істоти
10. Пробачте мені
11. Нічого страшного
12. Все гаразд
13. Забудьте про це
14. Нема проблем
15. Не вибачайтесь
16. У всякому разі, дякую
17. Прошу вибачення
18. Сподіваюсь, ви мені пробачите
19. Це не повториться

Task IV. Total 20

Compose sentences with proposed question words.

1. The air we breathe consists mainly of oxygen. (What …? What … of?)
2. A mixture of nitrogen oxide and nitrogen dioxide is called NO. (What …? Common …?)
3. Sulfur dioxide reacts with oxygen and other materials. (What …? What … with?)
4. Particulates can accumulate in the lungs. (What …? Where …?)
5. Particulates interfere with the ability of lungs to exchange gases. (What …? Why …?)

Task V. Total 10

Compose sentences using the following words.

1. I, clumsy, was, sorry, I, am, so.
2. do, not, to, apologize, have,you.
3. Engines, to, modifications, many, automobile, the, loss, reduced, have, of, to, the, atmosphere, hydrocarbons.
4. The, surrounds, the, is, the, layer, gas, earth, atmosphere, of, that.
5. The, has, a, ability, atmosphere, to, pollutants, and, disperse, accept, to, tremendous.

Task VI. Total 20

Choose the correct translation of the modal verbs.

1. We are to meet in the morning to go to the conference on outdoor and indoor pollutants.

A) в змозі C) повинні були
B) слід D) повинні

2. You should participate in environmental groups and movements.

A) зобов'язані C) слід
B) повинні були D) може

3. I can't give up smoking.

A) не повинна C) не слід
B) не можу D) не зобов'язана

4. Farmers have to be very careful using pesticides.

A) вимушені C) слід
B) зобов'язані D) можуть

5. They should have warned us about the danger of disperse pollutants.

A) повинні були C) ймовірно
B) слід було D) мабуть

Task VII. Total 10

Give 3 forms of irregular verbs and compose 5 sentences with them.

1. мати
2. вести (приводити)
3. витрачати
4. означати
5. губити
6. горіти
7. бігти
8. ламати
9. тримати
10. говорити

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MODULE III

WATER

CURRICULUM MATERIALS FOR MODULE 3
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 3

Предмет, цілі, мета навчальної дисципліни «англійська мова професійного спрямування».
Тема 1. Фонетика та граматика: Утворення умовного способу (Conditional Mood). Моделі: I wish I were …(Шкода, що ні…)
Тема 2. Аналітичне читання: тексти за фахом з базових підручників. Реферування аутентичних текстів за фахом.
Тема 3. Усна практика: Weather. Climate in Great Britain. Climate in Ukraine. The greatest rivers in Europe and the USA. Діалогічне мовлення за вказаними темами. Аудіювання за темою модуля 3. Проектна робота по модулю 3.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольні роботи за матеріалами модулю 3 (зразки).
У результаті вивчення модуля 3 студент повинен
знати:
правила англійської фонетики; граматичний матеріал: Утворення умовного способу (Conditional Mood). Моделі: I wish I were …(Шкода, що ні…)
вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 3
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 3

3.1. Unit 5.Water

Man and his history is
"a question of water and a little else"
Aristotle (philosopher)

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. assets (n) – майно, актив
2. cesspool (n) – стічна яма
3. claims (n) – вимоги, домагання
4. clog (v) – засмічувати

5. condemn (v) – осуджувати, бракувати, засуджувати
6. cripple (v) – калічити, нівечити, робити непридатним
7. dike (n) – дамба, гребля, стічна канава
   dike (v) – захищати дамбою, осушувати каналом
8. disaster (n) – лихо, нещастя
9. effluent (adj) – той, що витікає, просмоктується
   effluent (n) – стік, стічні води, річка, потік
10. endanger (v) – наражати на небезпеку
11. enforce (v) – підсилювати, робити тиск, заставляти
12. feat (adj) – спритний
13. float (v) – плавати, триматися на поверхні води
14. grassland (n) – пасовище, луки
15. plow (plough) (v) – орати
16. pottery (n) – гончарні вироби
17. precious (adj) – дорогоцінний, коштовний, вишуканий
18. restrict (v) – обмежувати, ставити межу
19. revenue (n) – дохід
20. salvation (n) – спасіння

II. Vocabulary check.

Activity 1. Give Ukrainian equivalents for the following.

1. lavish lifestyle
2. sewage dumping
3. sewage sludge
4. sewage pollution
5. brain damage
6. coastal water
7. dumping ground
8. endanger plants
9. extensive plowing
10. civil engineering
11. grazing of cattle
12. magnificent feat

Activity 2. Match the following words with their explanations and try to give synonyms or antonyms.

shortage	water plant of very simple structure
algae	amount of deficiency; condition of not having enough
silt	waste material and water carried in sewers
sediment load	material carried along and then left in a place

	by moving water or ice
to irrigate	to break up or turn over land with a plough; to force a way or make a track
scarce	loose land, mud, soil, etc. carried in running water, then dropped
plowing	to supply water to (dry land) by providing with man-made stream
lavish	not much or many compared with what is wanted; hard to find, not plentiful
sewage	very free, generous or wasteful in giving or using

III. Grammar review

Утворення умовного способу (The Conditional Mood)

Conditional Mood - складна форма, яка утворюється з допоміжних дієслів should і would і основи інфінітива відмінюваного дієслова. Conditional Mood має два часи: Present Conditional і Perfect Conditional.
Present Conditional збігається за формою з Future Simple in the Past, a Perfect Conditional - з Future Perfect in the Past, але вони розрізняються за своїм значенням.
Умовні речення вживаються з *if*. Основні види умовних речень це: тип 0, тип 1, тип 2,тип 3.
Вони складаються з двох частин: the *if – clause* (гіпотеза) і головне речення (результат). Коли if – clause стоїть перед головним реченням , між ними ставиться кома. Якщо головне речення стоїть перед if – clause, кома не потрібна.
If the weather is good tomorrow**,** we will go to the beach.
Якщо завтра буде гарна погода, поїдемо на пляж.
We will go to the beach, ***if*** the weather is good tomorrow.

	If – clause (гіпотеза)	**Головне речення (результат)**	**Вживання**
Тип 0 (загальна правда)	if + present simple	present simple	Те, що завжди існує
Тип 1 (реальний теперішній час)	if + present simple, present continuous, present perfect or present perfect continuous	future/imperative/can/ may/might/must/ should/ could + bare infinitive	Реальне, можливо трапиться у теперішньому або

			майбутньому
Тип 2 (нереальний , в тепер.часі)	if + past simple or past continuous	would/could/might + bare infinitive	Уявна ситуація, яка протирічить фактам в теп.часі, вживається для порад
Тип 3 (нереальний, в минулому часі)	if + past perfect or past perfect continuous	would/could/might + have + past participle	Уявна ситуація , яка протирічить фактам в минулому, також вживалася для вираження співчуття або критики

Exercise 1.
Fill in the gaps with *if or when* and a verb in the present tense, then translate the sentences:

1. We might go for a walk tomorrow. ……, we will take the dog with us.
2. The guests will arrive soon. ……, we will greet them at the door.
3. I am going to phone Sam in a minute. …… him, I want you to leave the room.
4. I might visit Pamela tomorrow. …… her, I will buy her a present.
5. The bus comes at eight o'clock. ……, we will all get on it.
6. She might invite us to her party. …… us, we will go.
7. The film will start soon. ……, I will record it.

Exercise 2.
Environmentalists are worried about the greenhouse effect. Make sentences , using if…,…will…
Example
***If** the earth gets warmer, the sea **will** get warmer.*
***If** the sea gets warmer…*

If …the earth gets warmer
the sea gets warmer
the ice at the North and South Poles melts
the sea level rises
there are floods in many parts of the world
many people lose their homes and land

Exercise 3.
Rewrite the following as conditional sentences:

1. You need to go to Egypt to see the Sphinx. If ……
2. John didn't leave early so he didn't get there on time. If ……
3. She uses factor 12 suntan lotion as she gets sunburnt easily. If ……
4. The fax machine is broken so I'll have to send it by post. If …….
5. Calling her might make her feel better. If ……
6. There'll be an election if the president resigns. Providing ……
7. More tickets need to be sold, otherwise the concert will be cancelled. If ……..
8. You'll have trouble selling your house if you're not prepared to accept a lower offer. Unless……
9. He cancelled his trip because he had run out of money. If ……..
10. Tom didn't wear a coat and caught a cold. If ……
11. You need to study to pass this exam. Unless ……
12. You really ought to go somewhere sunnier to get a suntan. Unless …….
13. He doesn't know her. That's why he didn't speak to her. ……
14. He lost his job. He's unemployed now. ……

Exercise 4.
Put the verbs in brackets into the correct tense, then identify the types of conditionals:

1. If he …… (change) jobs, he would be a lot happier.
2. Even if he …… (ask) them, they wouldn't have agreed to come.
3. I …… (not/trust) him if I were you.
4. If you're patient for a few minutes, I …… (be able) to finish this.
5. I wouldn't have been able to do it unless she …… (help) me.
6. Sometimes if you …… (take) a chance, it pays off.
7. If he …… (wake up) earlier, he wouldn't have been late for work.
8. If we …… (intend) to spend the day in London, we would have bought a day pass.
9. If she …… (be) more experienced, she would be more likely to get a job.
10. If the food …… (not/be) so bad, we wouldn't have complained.

Exercise 5.
Complete the text by putting the verbs in brackets into the correct tense:

If I were world leader, I 1) …… (try) to stop the destruction of the earth and 2) …… (make) the world a better place for all people. If the world's problems had been tackled sooner, the quality of life 3) …… (improve) long ago. First of all, I would try to bring about peace in the world. As long as there is fighting between nations, millions of people 4) …… (continue) to suffer and die. If wars continue, children 5) …… (be left) without parents and 6) …… (grow up) in a world of misery and fear. But as long as people disagree over land and possessions, the fighting 7) …… (go on).

Therefore, I would ensure that all people were treated as equals and given the same opportunities in life. It would also help if all countries 8) …… (stop) producing arms so there would no longer be the weapons with which to fight. In addition, I would introduce laws to reduce pollution. If pollution levels had been controlled earlier, life 9) …… (not/become) so unbearable. If I 10) …… (have) the power, I would ban all cars from city centres and increase public transport. If there (be) more trees, the air we breathe 11) …… (be) cleaner. Unless measures are taken soon, it 12) …… (be) too late both for ourselves and our children.

IV Pre-text discussion

Activity 1. Do you know that:

- The shortage of clean water is dangerous.
- Per capita water consumption differs in the developed and in the developing countries.
- Access to clean drinking water is one of the basic human rights.
- Lake Baikal is one of the largest fresh water lakes in the world.
- Environmental standards in the former Soviet States were much lower that in the West.
- The Mediterranean Sea is responsible for 50 percent of all marine pollution.
- Industrial wastes and sewage dumping are the main sources of water pollution.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The problem of clean water is the most urgent environmental problem of our days.
2. Man and his history is a question of water and a little else.
3. Many dams and irrigation schemes have been and are environmental disasters.

V. Read, translate text 5.

Text 5

"Water"

One of the most urgent environmental problems in the world today is the shortage of clean water. There are large differences in per capita water consumption between different countries. A comfortable lifestyle (with flush toilets, washing machines and public swimming pools) uses a lot of water. A lavish lifestyle (with automatic car-wash machines, Jacuzzis and backyard swimming pools) uses many

times more. The average Kenyan uses five liters of water a day, the average American uses 1,000. More and more people in the world are adopting a Western lifestyle. So even if population growth stops, the water shortage will get worse.

Access to clean drinking water is a basic human right. But acid rain, industrial pollution and sewage dumping have made many sources of water undrinkable. Lakes, reservoirs and even entire seas have become vast pools of poison. Lake Baikal in Russia is one of the largest lakes in the world. It is also one of the most beautiful. The local people call it the Holy Sea. It contains a rich variety of animals and plants, including 1,300 rare species that do not exist anywhere else in the world. But they are being destroyed by the massive volumes of industrial effluent which pour into the lake every day. Until very recently, environmental standards in the former Soviet states were much lower than in the West. Even where laws existed, the government did not have the power to enforce them. Most industries simply ignored the regulations.

The Mediterranean Sea occupies 1 percent of the world's water surface. But it is the dumping-ground for 50 percent of all marine pollution. Sixteen countries border on the Mediterranean. Almost all of them regularly dump shiploads of industrial waste a few miles offshore. Sewage effluents pour into the sea only meters from popular bathing beaches. In 1975, the United Nations Environment Program brought together these 16 countries and drew up the Mediterranean Action Plan. The countries agreed to stop dumping from ships and to reduce sewage pollution. Few, if any, of them have kept their word.

In the 1950s, Japanese factories dumped waste containing mercury into the sea at Minamata Bay. Shellfish became contaminated with this very toxic heavy metal. Over 2,000 people developed brain damage and 40 of them died. These tragic examples should teach us that the ocean is neither a garbage can nor a toilet.

Sewage is a rich source of micronutrients, which are essential for the growth of plants and animals. Sewage sludge, and fertilizers washed off the land, increase the concentration of micronutrients (particularly nitrates) in the sea to dangerous levels. Plankton (tiny plants that float near the surface of the water) become so numerous that they cut out the light to deeper parts of the sea. This endangers plants that grow on the sea bed, which need the sun's light for photosynthesis. Seaweed is also very sensitive to changes in the level of micronutrients in coastal waters. One or two species of algae (seaweed) can outgrow all the other species. Overgrowth of algae can cause slimy, smelly, ugly deposits on beaches. Occasionally algae produce poisonous toxins that can kill fish or cause skin rashes in swimmers.

We condemn deliberate pollution of the water supply by industrial waste and sewage dumping. But we are usually impressed by "developments" such as huge dams, dikes and irrigation schemes. These are often magnificent feats of civil engineering. They cost a lot of money and use modem materials and equipment. We often assume that the people who plan and build these systems know what effect they will have on the environment. In fact, many dams and irrigation schemes have been environmental disasters. Three quarters of the world's water is used to irrigate crops, so inefficient or extravagant irrigation schemes can cripple a region's water supply. The Aral Sea in Russia

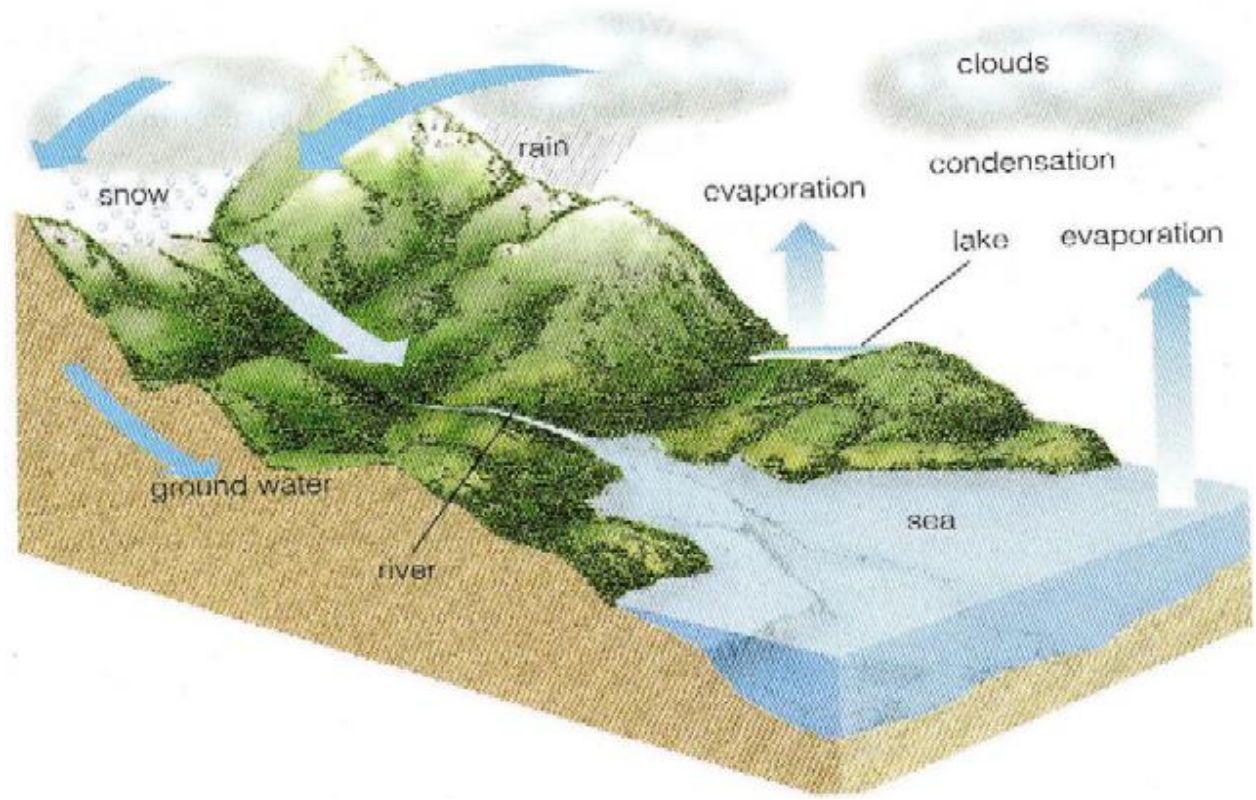
was once the fourth-biggest lake in the world. It is now less than half the size it was in 1965. Badly-planned irrigation schemes have taken water from the rivers that fed the Aral Sea. In addition, overuse of pesticides on the cotton crops nearby has polluted the water with toxic chemicals. Great damage was caused to the Nile Valley by Egypt's Aswan Dam.

In some cases, major water diversion projects began because a new technology became available and governments wanted to demonstrate their new-found power over nature. Dams can also be a direct political tool.

Rivers often flow through one country to get to another, so the first country can potentially control the flow of water into the second. Turkey has recently built several dams across the river Euphrates, and has already used these darns to restrict the water flowing through to Iraq and Syria. It has also signed an agreement to sell water to Israel.

"Development" projects can also make soil erosion worse. Forests and grasslands in a river valley soak up water after heavy rains and slowly release it back into streams and rivers. This prevents the valley from becoming dry and dusty in the months without rain. In addition, vegetation also prevents erosion by holding the particles of soil together. If there is no vegetation, the soil crumbles away and is washed into the rivers as silt. Rivers become clogged with sediment. Lakes change from clear, blue pools into thick, muddy puddles. The destruction of rainforests, and intensive farming practices (such as heavy grazing of cattle and excessive plowing with powerful machines) both increase soil erosion. Because of deforestation and modem farming methods, the sediment load of the Yellow River in China is 1.6 billion metric tons per year, and that of the Ganges is 1.455 billion metric tons. The traditional farming methods used by primitive communities may seem inefficient, but the sediment loss from these methods is tiny.

The best things in life are free. But because water is free, we often take it for granted. A few years ago, people thought that the supply of clean water in the world was limitless. Today, many water supplies have been ruined by pollution and sewage. Others have dried up because we have diverted the water for hydroelectricity or badly-planned irrigation projects. The destruction of forests and grasslands has increased soil erosion. Clean water is now scarce, and we are at last beginning to respect this precious resource. Like other environmental resources, the clean water that remains is the property of our children and grandchildren. For their sake, we must fight to protect what is left of the water supply.



The water cycle

VI. Comprehension check

Activity 1. Do the false/true activity

1. If the population falls there will be enough water.
2. The use of sewage sludge and fertilizers is bad for plants on the sea bed.
3. It is good that sewage sludge and fertilizers help plankton to grow strongly.
4. Polluting water with industrial waste and sewage is worse than the damage caused by poor civil engineering developments.
5. Very many people are protesting about industrial effluent but very little is being done.
6. Forests and grasslands are necessary to keep valleys supplied with water.
7. The Aral Sea is the fourth biggest lake in the world.
8. People are less likely to condemn poor civil engineering developments than polluting water with industrial waste and sewage.
9. There have been some improvements in treating industrial effluent in Russia.
10. Clean water is now scarce and we are at last beginning to respect this precious resource.

Activity 2. Look through text 5 carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. The reasons for the shortage of water _____.

2. Factors affecting the demand of water and factors affecting the supply mean that nowadays there is _____.
3. The demand for water has increased because _____.
4. There is also less water available in reserves on account of _____.
5. We condemn pollution of water supply by _____.
6. The Mediterranean Sea occupies 7 percent of _____.
7. Access to clean drinking water is _____.
8. Lake Baikal contains a rich variety of _____.
9. One of two species of algae can outgrow all _____.
10. Many dams and irrigation schemes have been _____.

VII. Discussion

Activity 1. Define the logical parts of text 5 entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 5.

Activity 3. Translate in writing and reproduce.

- Can the sea-water be the cause of health hazards?
- Certainly. Today grave concern is expressed about the pollution of the sea with untreated domestic and industrial sewage. This concern is expressed with justification. Sea is the final cesspool into which most of the discharge of man's polluting activities flows.
- What is the most important aspect of the pollution?
- The sea pollution problem has many aspects but in its essence it is a question of toxicology. The toxic effects of a chemical substance on a specific cellular system of an organism, be it a plant, an animal, or a man are manifold and harmful. Industrial pollution has proved disastrous to the fishery, especially, in certain regions.
- What is the present state of affairs with fish safety in general?
- Well, today it is very hard for big and small fish alike to survive in polluted water as they choke with refuse, ashes, chemical salts, tars, phenol and bacteria. In some places a layer of grease has formed on the surface of the water which prevents oxygen from penetrating through it.
- Can the fish from waste water be the direct threat to human health?
- Yes, indeed. It's the matter of great concern. Public Health Service record (official report) has established that human poisoning and illnesses associated with eating contaminated fish and shell-fish multiply.
- What parts of the sea are most susceptible to pollution?
- The continental coastal regions and the insular shallow water areas in tropical seas are. It's just the part of the sea from which the world's marine fishery products are derived.

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- Студенти, у Вас є питання по темі лекції „Вода”?
- Так, у мене питання.
- Будь ласка. Я спробую відповісти.
- З лекції я зрозуміла, що чим вище рівень життя, тим більше витрачається води, чи не так?
- Так, ви повністю праві! Є розвинені країни, які використовують в день в середньому 1000 л. води на людину, але ми знаємо, що в інших країнах споживання води на душу населення в день складає 5 л.
- Дякую.

Activity 4. Make up your own dialogues on the theme “Water”.

TEST/REVIEW

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Pollution problems first … during ancient times.

A) arose C) have appeared
B) were arising D) arosed

2. The problem of pollution … a major one at the end of the 20th century.

A) is C) were
B) will D) was

3. The forests ... disappearing at the rate of 0.001 hectares a day when they started investigation.

A) was C) were
B) are D) will be

4. He always … your compliment.

A) appreciated C) have appreciated
B) appreciates D) were appreciating

5. She … inviting them to the conference when he interrupted her.

A) is C) has
B) were D) was

Task II. Total 10

Use the correct form of the adjectives.

1. It is the … harmful substance I ever heard about.

A) more B) most C) less

2. Coal was used to power … of the factories and to heat … of the homes.

A) many B) a large number C) most

3. The pollution problem is … complicated … it serious.
A) so … as B) as … as C) both as

4. Road transport makes journeys … than air transport.
A) long B) longest C) longer

5. New inventions of the 1900s made pollution steadily the …
A) less B) least C) worse D) worst

Task III. Total 20
Give English equivalents of the following.

1. Виділяти дим в атмосферу
2. Зливати нафту
3. Отруювати воду
4. Впливати на природу
5. Забруднювати навколишнє середовище
6. Порушувати баланс в живій природі
7. Гази, що отруюють
8. Вимивати
9. Подразнювати легені
10. Шкідливий вплив
11. Ви навіть не уявляєте
12. Я Вам вдячний
13. Ось, візьми будь ласка
14. Тверді відходи
15. Кислотні дощі
16. Забруднення повітря
17. Теплове забруднення
18. Будь ласка (3 вислови)
19. Завжди Вам раді
20. Не треба дякувати.

Task IV. Total 10
Compose sentences with proposed question words.

1. Railways have several advantages over road transport. (What…?) (common)
2. Vehicles are as comfortable as dangerous. (What…?) (common)
3. Pollution in the developed countries is higher than in the underdeveloped. (What…? Where…?)

4. Pollution problems first arose during ancient times. (When…? What problems…?)
5. In 1986 an explosion and fire occurred at a nuclear power plant in Chernobyl. (When…? Where…?)

Task V. Total 10
Insert the necessary words.

1. Our natural beauty is … .
A) interesting B) unique C) important

2. People pollute the air with … .
A) litter B) exhaust gases C) factories

3. The purpose of the Earth Day is to increase public awareness of … .
A) life B) environmental problems C) future

4. In 1986 there happened the largest … .
A) emission of gases B) radioactive emission C) oil spill

5. Air pollution from … has been greatly reduced in most parts of the world.
A) solid wastes B) coal burning C) water pollution

Task VI. Total 20
Translate into English.

1. Ми повинні створювати суспільні організації для боротьби з забрудненням довкілля.
2. Цей район найбрудніший в місті.
3. В 20-му сторіччі групи людей створили кілька потужних екологічних рухів.
4. Політичні зміни в Східній Європі в кінці 20-го сторіччя були пов’язані з екологічними проблемами.
5. Кожен повинен боротися з забрудненням довкілля.
6. Проблема забруднення повітря, землі та води стала головною наприкінці 20-го сторіччя.
7. Вчені та інженери повинні знаходити шляхи зменшення забруднення довкілля.
8. Усі забруднювачі можуть також впливати на клімат.
9. Парниковий ефект може підвищити температуру на землі.
10. Численні дослідження в США та в Європі показують, що шум грає велику роль у виникненні багатьох хвороб.

Task VII. Total 10

Compose sentences using the following words.

1. Dinner, to, thanks, for, many, inviting me.
2. It's, go, place, to, to, eat, place, but, a, good, terrible, a.
3. I, just, that's, to say, what, wanted
4. Do, I, least, could, was, the, it.
5. You, grateful, idea, am, for, present, I, your, how, have, no.

Task VIII. Total 10

Give 3 forms of irregular verbs and compose 5 sentences with them.

1) to become
2) to have
3) to take
4) to make
5) to understand
6) to blow
7) to give
8) to go
9) to leave
10) to come

3.2. UNIT 6. LIQUID ASSETS

The river Jordan is deep and wide with milk and honey on the other side… hallelujah

Old gospel song

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. degrade (v) – погіршувати, псувати, занепадати
2. desert (n) – пустеля
3. estuary (n) – дельта, гирло (річки)
4. issue (n) – суть, випуск, результат
5. livelihood (n) – засоби існування
6. moisture (n) – вологість, сирість
7. reduce (v) – знижувати, послабляти, зменшувати
8. scarce (adj) – недостатній, бідний
9. seaweed (n) – морська водорість
10. sediment (n) – осад, відстій
11. sewage (n) – стічні води
12. shelter (n) – покрівля, притулок
13. shortage (n) – брак чого-небудь
14. skin (n) – шкіра

15.sluice (n) – шлюз, водовід, водосховище, канал
16.soak (up, in) (v) – всмоктувати (ся), просочувати (ся)
17.software (n) – програмне або матеріальне забезпечення
18.spring (n) – джерело
19.survive (v) – виживати
20.wash off (v) – змивати (ся)

II. Vocabulary check.
Activity 1. Give English equivalents for the following.

1. випасати худобу
2. розкішне життя
3. сильна ерозія
4. екстенсивне землеробство
5. вантаж (навантаження) осадової породи
6. споживання на душу населення
7. затвори з стічних вод
8. питна вода
9. сприймати за належне
10.русло річки

Activity 2. Give Ukrainian equivalents for the following.

1. average depth
2. idea of pottery
3. tropical sun
4. springs and rivers
5. alarming figure
6. ignore moisture
7. lack of moisture
8. reallocation of water resources
9. degradation of rivers
10.wet regions

III. Grammar review. "Conditional Mood"

Вживання:
- **Тип 0:**
  If/When the sun ***shines***, snow ***melts***.
  If/When it ***rains***, the roads ***get*** slippery and dangerous.
  If/When the temperature ***falls to*** 0˚C, water ***turns into*** ice.
- **Тип 1:**
  If he ***doesn't study*** hard, he ***won't pass*** his exam.

If we ***work*** hard, we***'ll finish*** the project on time.
If you ***need*** help, ***come*** and ***see*** me.
If you ***have finished*** your work, we ***can have*** a break.
If you***'re*** ever in the area, you ***should come*** and ***visit*** us.

- **Тип 2:**
If I ***won*** the lottery, I ***would buy*** an expensive car and I ***would go*** on holiday to a tropical island next summer.
If I ***had*** time, I ***would take up*** a sport.
If I ***were*** you, I ***would talk*** to my parents about it.
- **Тип 3**
If John ***hadn't got up*** late, he ***wouldn't have missed*** the bus.
If she ***had studied*** harder, she ***would have passed*** the test.
If he ***hadn't been acting*** so foolishly, he ***wouldn't have been punished***.
Had she been asked, she **would have given** her permission.
- **Всі типи умовних речень можуть бути змішаними, і любий час може вживатись , якщо дозволяє контекст.**
If they were working all day (Type 2), they will be tired now (Type 1).
If I were you (Type 2), I would have accepted the job (Type 3).
If he were a better driver (Type 2), he wouldn't have crashed the car. (Type 3).
If she had finished earlier (Type 3), she would be going to the party tonight (Type 2).

Конструкція з *I wish ...*

Часто реченню з нереальною умовою передує жаль з приводу неможливості його виконання. Форма таких речень відрізняється в українській та англійській мовах. В українській це шкода, в англійській – бажання, щоб було по-іншому.

I wish he were here. – Шкода, що його тут немає. (Хотілося б, щоб він тут був).

I wish he had been here. – Шкода, що його тут не було.

I wish he would be here. – Шкода, що його тут не буде.

Exercise 1.
Rewrite the following as conditional sentences:

1. You felt sick and you missed your friend's birthday party.
2. You got up late and you missed the train.
3. You weren't offered the job because you weren't qualified.
4. You're not a senior staff member so you can't use a car park.
5. You didn't go to the meeting so you didn't hear about the safety inspection.
6. You want to go away for the weekend but you've got lots of homework.
7. You want a pet but you're allergic to animals.

8. You damaged the video because you didn't know how to connect it.
9. You like chocolate but you're on a diet.
10. You enjoy playing tennis but you have twisted your ankle.

Exercise 2.
Translate into English.

1. Якби люди менше втручалися у природні процеси, клімат не змінювався би так швидко.
2. Було б добре, якби кількість автомобілів на наших дорогах зростала повільніше.
3. Я був би дуже радий, якби літо було довшим і теплішим.
4. Вони допомогли б мені, якби були зараз тут.
5. Води у наших водоймах були б набагато чистішими, якби підприємства подбали про очисні споруди.
6. Кількість бідних на планеті зменшилась би, якби багаті думали не тільки про свої власні інтереси.
7. Якщо не будуть прийняті міри щодо зменшення викидів парникових газів, озоновий шар може зникнути.
8. На вашому місці я б завершив цей проект, як найшвидше.
9. Наші діти і онуки відчують на собі результати потепління клімату, якщо ми не прикладемо належних зусиль .
10. Я ніколи не згодилася б на цю роботу, якби вони не запросили мене.

Exercise 3.
Complete these sentences using Active Vocabulary:

1. If it stopped raining, we *could go out.*
2. Would you use a computer, if _____
3. I'd feel quite happy, if _____
4. Would you mind if _____
5. What would he _____, if _____
6. If _____ , where _____?

Exercise 4.
All people have dreams. Tell other students about your dreams and desires:

Begin with:

1. I wish I were _____ (who? what?)
   For ideas: a customs officer, a president, a butterfly, a top manager, etc.
2. I wish I did/I could _____ (do something)
   For ideas: speak fluent English, fly, win, fall in love, discover, ride, etc.
3. I wish I were _____ (like what?)
   For ideas: beautiful/handsome, strong, healthy, wealthy, dangerous, prosperous.
4. I wish I had _____ (what?)

For ideas: a castle, a private airplane/yacht, computer.

5. I wish I were _____ (where?)

For ideas: in New Zealand, in train, on the beach, in London, at home, etc.

IV Pre-text discussion

Activity 1. Do you know that:

- Under the tropical sun women have to carry water again, again and again.
- Egypt has 55 bn cubic meters from the Nile.
- On average, one million people require a billion cubic meters of water a year.
- The state of our water largely depends on the conditions of estuaries.
- The earth has as much water as it ever had: no more, no less.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. Water, for everyone in the Middle East is gold.

2. Water played an important part in man's progress.

3. The greatest number of townspeople need more and more new water sources.

V. Read, translate text 6.

Text 6.

"Liquid Assets"

There is no life without water. Man can live without clothes, without shelter, and even for some time without food. Without water he soon dies. But not all water helps him to survive: if it is not clean, then also he may die before his time.

Some people say that man and his story is "a question of water and little else." All his food has water, from about 60 to as much as 95 per cent. His body is about 70 per cent water. The surface of the earth is 70 per cent water to an average depth of over 4 kilometers. But often man does not have enough water.

Water played an important part in man's progress. He needed something to carry and keep water in, and so the idea of 'pottery was born. Ancient civilizations rose on the banks of the Nile, the Tigris, and other rivers. But then the world's population was not so large as it is now. And industry is thirsty, too. We need 3,5 liters of water to produce a kilogram of dry cement, 10 liters to produce one liter of petrol, 100 liters to produce one kilogram of paper, and so on.

The greatest number of townspeople needing new water services lives in South-Central and South-East Asia. The needs are greatest in India, Indonesia, the Philippines, Nigeria, Brazil and Pakistan.

Under the tropical sun women have to carry water again, again and again. In the dry parts of Africa, where there is little surface water and no ground water,

housewives spend most of their time carrying a few liters of water from springs and rivers which are sometimes as much as 15 kilometers or three good hours' walk away. People there are so short of water that they use it mostly or only for drinking , and very little or nothing is left for hygiene.

The earth has as much water as it ever had: no more, no less. But with every year the population of the world gets larger and larger.

In the climb up the ladder of civilization, first things come first; one of those things is certainly clean, plentiful and convenient water supply in all parts of the world.

For the Middle East, water has always been a politically sensitive issue.

The river Jordan, in the words of the old gospel song, is deep and wide with milk and honey on the other side... hallelujah! But no matter how deep and wide it may have been in biblical times, today the river is not much more than a trickle.

On average, one mi1lion people require a billion cubic meters of water a year, which means that the Middle East can meet only two-thirds of its needs. These alarming figures make the situation look better than it actually is because comparisons with wetter regions ignore moisture – or lack of it – in the soil.

"In the UK they only count the rivers and ground water, which doesn't have to supply the agriculture. About 80%-90% of UK water is in the soil". The Middle East, on the other hand, has little soil water.

Egypt, with a similar population to the UK, has 55 bn cubic meters from the Nile – and that's all. It's all engineered water and it gets counted.

This raises some intriguing questions. If the Middle East has been so massively short of water for years, how has it survived?

Water, for everyone in the Middle East, is a highly sensitive issue – not least because it is so closely related to the food supply. As a result, politics gets in the way of devising economically and environmentally logical policies.

Logically the first priority is to bring the issue into the open and secure supplies of virtual water through international food agreements. The second priority is to manage the demand for water and relocate it to the most profitable uses. The third priority is to use it more efficiently by improving irrigation, reducing waste, and so on. But in terms of political feasibility, these priorities are reversed in the Middle East.

The idea that the region will have to meet its water shortage by importing vast and growing quantities of food –for ever – creates feelings of deep insecurity, linked as it is too many people's livelihoods. In Saudi Arabia, for example, at enormous expense they started to grow wheat and even exported some.

But reallocating water resources can bring huge benefits. As a field of wheat, the land would use 10,000 cubic meters of water per year, generate revenue of $3,000 – $4,000 and provide half a job. As a college, it uses the same amount of water, turns over $50 m a year, provides 1,000 jobs and educates 3,500 students. This helps to explain why many Middle Eastern governments are so enthusiastic

about information technology: you can write software in the desert, and it takes less water than growing a row of beans.

Reallocating water to more profitable uses also involves social change as people move to different types of jobs – arousing controversies that the politicians would rather avoid. In Egypt farmers are an important political force. Allocating water efficiently has a high political cost. Peop1e don't want to move water out of agriculture.

Ukraine's major water resource is the Dnipro, along with the Danube, Dnister, Southern Buh, Tysa, Prut, and other rivers. Experts stress that every year nearly one-third of the Ukrainian population suffers from illnesses caused by industrial waste being discharged in these bodies of water.

The state of our water and the full flow of these major rivers largely depend on the condition of their estuaries – small rivers of which there are some 63,000 in Ukraine. Their role is extremely important; surfice it to say that 90 percent of the populated areas in our country are located precisely in the valleys of small rivers and are using their water. However, the state of these small rivers in Ukraine is alarming. According to Derzhvodhosp statistics, Ukraine lost some 5,000 small bodies of water in the second half of the 20th century; this will inevitably cause our large rivers to degrade.

VI. Comprehension check

Activity 1. Do the false/true activity

1. Water is closely related to the food supply.
2. Water in the Middle east is not a highly sensitive issue.
3. About 80-90% of UK water is in the soil.
4. One million people require a billion cubic meters of water a day.
5. For the Middle East water has always been a political issue.
6. Ancient civilization rose on the banks of the Volga and Dneper.
7. The state of river water doesn't depend on its estuaries.
8. Ukraine lost some 5000 small bodies of water in the second half of the 20th century.
9. In Egypt a farmer isn't an important political force.
10. The earth doesn't have as much water as it ever had.

Activity 2. Look through text 6 carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Today the river Jordan is not much more than a _____.
2. We need 3,5 liters of water to produce _____.
3. The surface of the earth is _____.
4. Ukraine's major water resource is _____.
5. Relocating water resources _____.
6. The Middle East can meet only two-thirds of _____.
7. Rather often a man does not have _____.

8. An ancient man needed something to _____.
9. The greatest number of townspeople needing new water services lives in _____.
10. In Saudi Arabia they started to grow _____.

VII. Discussion

Activity 1. Define the logical parts of text 6 entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 6.

Activity 3. Translate in writing and reproduce.

- Що ти робиш? У тебе на столі стільки книг та газет.
- Я шукаю матеріал до доповіді про стічні води. Я буду виступати з нею на студентській науково-технічній конференції.
- На жаль, я не можу тобі допомогти, тому що навчаюсь на факультеті іноземних мов. А що таке стічні води? Це каналізація? (sewerage).
- Ні! Стічні води – це джерело мікронутрієнтов (дрібні частки поживних речовин), які дуже важливі для росту рослин і тварин.
- Ну то й що? (And so what of it?)
- Піна та бруд від стічних вод вимивають ґрунт, збільшують концентрацію мікронутрієнтів (особливо нітратів) в морі до небезпечного рівня, а це дуже погано для навколишнього середовища.
- Зрозуміло.

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- Добрий вечір, Іване Івановичу.
- Добрий вечір, Марино.
- Іване Івановичу, що таке планктон?
- Планктон – це дрібні рослини, які плавають біля поверхні води.
- А вони корисні чи шкідливі з екологічної точки зору?
- Ну, скоріше шкідливі. Якщо їх багато, то вони не дають можливості світлу проникати у більш глибокі шари води. А це шкідливо для рослин, які ростуть на дні моря і потребують сонячного світла для фотосинтезу.
- Зрозуміло. Дякую, Ви мені дуже допомогли.
- Будь ласка. Завжди радий допомогти майбутній колезі.

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- Ти що-небудь чула про проекти з відведення води або як їх ще називають „проекти зі зміни русла рік”?
- Ні, а навіщо потрібні ці проекти?
- Наскільки я знаю, ці проекти виникли завдяки новим технологіям, які дозволили вченим та уряду продемонструвати їх владу над природою.
- Так ці проекти шкідливі!
- Я думаю так само. Не можна змінювати течію річок. Дамби також були та і зараз є політичною зброєю.

Activity 4. Make up your own dialogues on the theme "Liquid Assets".

Summary writing.
Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. The greatest number of townspeople needing new water lives in South-Central and South-East Asia.
2. Climbing the ladder of civilization up we understand that clean, plentiful and convenient water is life.
3. Man can live without clothes, without shelter and for sometimes without food but without water he soon dies.
4. People in dry parts of Africa are so short of water that they use it mostly or only for drinking.
5. In Egypt farmers are an important political force.
6. Water for everyone in the Middle East is a highly sensitive issue.
7. People don't want to move water out of agriculture.
8. The people of Ukraine are alarmed by the state of their rivers.
9. On average one million people require a billion cubic meters of water a year.
10. The earth has as much water as it ever had.

Activity 2. Translate into English using the dictionary.

Гідросфера – це водна сфера нашої планети, сукупність океанів, морів, вод континентів , льодовикових покривів. Наша планета містить близько 16 млрд.куб.м води, що становить 0,25 % її маси. Основна частина цієї води (понад 80%) перебуває у глибинних зонах Землі – в її мантії. Підземна частина гідросфери охоплює грунтові, підґрунтові, між пластові води.

Для величезної кількості живих організмів, особливо на ранніх етапах розвитку біосфери, вода була середовищем зародження та розвитку. Вода у біосфері перебуває у безперервному русі, бере початок у геологічному та біологічному кругообігах речовин. Вона є основою існування життя на Землі. Без води не може існувати людська цивілізація, бо вода використовується людьми не тільки для пиття, а й для забезпечення санітарно-гігієнічних та господарсько-побутових потреб.

Загальний об'єм води на нашій планеті оцінюється вражаючою цифрою – 1385 мільйонів кубічних кілометрів. Якби Земля була правильною сферою, цієї кількості було б достатньо, щоб покрити її на глибину 2650 метрів.

Лише незначна частина цієї води придатна для використання людиною. Абсолютна більшість цієї колосальної маси – це гіркувато-солона морська вода, непридатна для життя та технічного використання.

IX. Long-term project work.

Prepare projects on the following topics.

1. Causes of the world water shortage.
2. The situation with lake Baikal and the Aral Sea.
3. Irrigation schemes: advantages and disadvantages.

X. Spoken English (Every day English)

1. Remember!

Ми кажемо: „ У природи немає поганої погоди". Англійці кажуть: „Немає поганої погоди, є поганий одяг". Коли нам нема про що поговорити, ми говоримо про погоду. Щоб заповнити паузи, говорять про погоду. Ми слухаємо прогноз погоди та плануємо, що одягти. Часто від погоди залежить наш настрій та й не тільки! Від відповіді на питання **"What is the weather like today?"**ми очікуємо все-таки чогось приємного, що підвищує настрій. Але відповідь не завжди звучить **"The weather is fine!"** іноді і **"The weather is nasty"** і настрій падає, але не забувайте „У природи немає поганої погоди!"

2. Speech patterns.

Weather

How's the weather?	Яка погода?
What's the weather like?	Яка погода?
It's nice	Гарна (погода)
It's pleasant	Гарна (погода)
It's dreary	Похмуро
It's sunny	Сонячно
It's cloudy	Хмарно
It's rainy	Дощить
It's foggy	Туманна погода
It's hot	Гаряче
It's warm	Тепло
It's cool	Прохолодно
It's chilly	Прохолодно
It's cold	Холодно
It's freezing	Морозно
It's windy	Вітряна погода
It's humid	Сиро

When there is precipitation at the moment

It is raining	Йде дощ
It is snowing	Йде сніг
It is sleeting	Йде дощ зі снігом

It is hailing	Йде град

Extreme weather events include the following:

What is happening?	Що відбувається?
There is lightning	Блискавка
There is thunder	Грім
It’s a storm	Шторм!
It’s a gale	Сильний вітер
It’s a hurricane	Ураган (сильний вітер зі швидкістю 75 миль на годину)
It’s a cyclone	Циклон
It’s a tornado	Торнадо (сильний вітер, що руйнує)
It’s an earthquake	Землетрус
It’s pleasant to walk in such weather.	Приємно гуляти в таку погоду
It’s pleasant to go skating in such weather	Приємно кататися на ковзанах в таку погоду
It’s pleasant to eat ice-cream when the temperature is 35° above zero.	Приємно з’їсти морозиво, коли температура 35°

The weather is fine	Погода чудова
The weather is wretched	Погода гидка
The weather is disgusting	Погода огидна
The climate is mild	Клімат м’який
The climate is humid	Клімат вологий
The climate is severe	Клімат суворий
The climate is temperate	Клімат помірний

Warm. Hot. Sleeting. Drizzle. Fog. Snow. To be fast. To be slow. To keep right time. Alarm-clock. Watch. a.m. p.m.

a.m. – in the morning
p.m. – in the afternoon, evening, at night.

What time is it?	Котра година?
It is one o’clock or it is one a.m.	Перша
It is two o’clock or it is two p.m.	Друга
It is seven o’clock or it’s seven p.m.	Сьома
It is eleven o’clock or it is eleven p.m.	Одинадцята
It is noon or it’s twelve p.m.	Полудень
It is midnight or it’s twelve a.m.	Північ

What time is it?	To answer:
use digital for:	it is + hour + the number of minutes past the hour
the traditional form:	it is + the number of minutes after the hour or the number of minutes before the hour

Digital form	Traditional forms
It's one-oh five	It's five after one. It's five past one
It's two-ten	It's ten after two. it's ten past two
It's three-fifteen	It's fifteen after two. It's fifteen past two
It's nine-forty five	It's fifteen to ten. It's fifteen of ten. It's a quarter to ten. It's a quarter of ten

What time is the concert?	О котрій годині починається концерт?
It's at eight o'clock (It's at 8 p.m.)	О восьмій вечора.
What time is the party?	Коли починається вечірка?
It's at seven-thirty.	О 7.30
What time are we leaving?	Коли ви їдете?
We're leaving at 6 a.m. sharp.	Ми їдемо рівно о шостій ранку.
My watch keeps right time.	Мій годинник йде правильно.
My watch doesn't keep right time.	Мій годинник йде неправильно.
My watch is slow.	Мій годинник відстає.
My watch is five minutes slow	Мій годинник відстає на 5 хвилин.

3. Dialogues to be remembered

***

- Lord! A beastly day. It's pouring outside. I'm wet through: my sweater, my shirt, jeans, socks, shoes are all wet.
- Gee! I'd say, Peter, you are wet!
- You don't look yourself. You should change your clothes as soon as possible, or you'll fall ill.

***

- I wouldn't put it like that. This winter is extremely warm. The temperature is usually high. There is no snow. It often rains.
- You have said it.

***

- What is the weather like today?
- It is rather warm, the sky is covered with grey clouds. Sometimes it rains.
- Do you like such weather?

- I don’t. In such weather I feel sleepy.
- Same here.

***

- Is it frosty?
- Oh, yes. The temperature is about 15 degree below zero.
- Don’t forget to put on your fur hat.
- I won’t.

***

- How long does winter last in your city?
- It depends… Though December, January and February are the winter months, sometimes winter begins in February and lasts only 2 months.

***

- What time is it now?
- I don’t know exactly.
- Don’t you have a watch?
- Yes, I do.
- Then, what time is it by your watch?
- I’ve forgotten it at home.
- It’s a pity.

***

- I must be off. Urgent business.
- What business I wonder?
- It’s an appointment with my doctor.
- I am to be in his office at half past one. And now it is 20 past one.
- Take care!

4. Translate in writing.

***

- Погода кепська сьогодні, чи не так?
- Так, мабуть (Yes, rather).
- Що трапилось?
- Я не міг заснути всю ніч через цей жахливий вітер.

***

- Чи помітили Ви, яка стоїть гарна погода?
- Вона чудова! (Gorgeous!)
- Дуже підходящий день для заміської прогулянки в ліс.
- Вірно!
- Шкода, що я не у відпустці насолоджуюсь природою!
- Тоді чекаю на вас внизу через 45 хвилин.
- Давайте звіримо годинники. Зараз 9.10. О 9.55 ми зустрічаємося в холі. Добре?
- Так, з нетерпінням чекаю на цю прогулянку.

***

- Сподіваюсь, погода скоро зміниться.
- Я також сподіваюсь. Дуже втомилася від цього безкінечного дощу.
- Лле як з відра вже 2 тижні.
- Не турбуйся! Англійці кажуть: „Немає поганої погоди, є поганий одяг”.

***

- Що ви знаєте про клімат Великобританії?
- Там м’який клімат. Середня температура взимку вище, ніж в Україні. Сніг ніколи довго не лежить.
- А річки замерзають?
- Ніколи! Темза суднохідна весь рік, не те що Дніпро, який замерзає взимку!

5. Situation for spontaneous projects.

1. You and your friend didn’t hear the weather forecast. When the lectures are over you see that it is raining heavily. You both don’t have any umbrella but in 5 minutes you are to meet with your boyfriend.
2. The acquaintance of yours has just returned from a week tour to Spain. You want to know about the weather in Spain if it really always rains in Spain.
3. Your watch is 10 minutes slow. But you have forgotten about it. You are sure that you have come to the lecture in time, but the lecture has already begun. You are sure that you have come in time, the lecturer is sure that you were 10 minutes late.

TEST-CONTROL FOR MODULE 3

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. If the pollution … it will not be enough water.

A) increase C) fell
B) falls D) increases

2. If people protest against environment pollution the surrounding … cleaner.

A) will be C) becomes
B) is D) has been

3. If the destruction of rainforest was … soil erosion would be less.

A) stopped C) is stopped
B) will be stopped D) is being stopped

4. I would … at the conference on environment if problems if I had been invited in time.

A) participate C) has participate

B) have participated D) participated

5. If we … to protect what is left for the water supply we will have enough water for the coming generation.

A) fought C) will be fighting
B) fight D) are being fought

Task II. Total 20
Give English or Ukrainian equivalents of the following.

1. Сильна ерозія
2. Питна вода
3. Споживання на душу населення
4. Dumping ground
5. Brain damage
6. Громадянське будівництво
7. Extensive plowing
8. Вантаж осадової породи
9. Розкішне життя
10. Graizing of cattle
11. Мені треба йти, термінова справа
12. Жахливий вітер
13. Чекаю з нетерпінням
14. Температура вище нуля
15. Дощ ллє за вікном
16. Яка сьогодні погода?
17. Йде град
18. Годинник показує точний час
19. Ваш годинник відстає на 6 хвилин
20. Зараз північ

Task III. Total 15
Complete the following conditional sentences and translate them.

1. You will attend the lecture on sewage water treatment, if ….
2. If the earth gets warmer, the sea ….
3. The North and South Poles will melt if the sea level ….
4. If I had forgotten my watch at home I ….
5. Your watch would keep right time if you ….

Task IV. Total 5
Make the following sentences disjunctive questions.

1. The weather is fine.
2. He always forgets his watch at home.
3. There is no life without water.
4. One million people require a billion cubic meters of water a year.
5. Water has always been a politically sensitive issue.

Task V. Total 10
Translate the following into English.

1. Гідросфера – це водна сфера нашої планети.
2. Наша планета містить близько 16 млрд. куб. м. води.
3. Вода є основою існування життя на Землі.
4. Людська цивілізація не може існувати без води.
5. Якби Земля була правильною сферою, об'єму води на нашій планеті було б достатньо.

Task VI. Total 10
Open the brackets to use the correct verb form.

1. The cause of health hazards (may) (can) (could) be sea water.
2. Water in the Middle East (to be) a highly sensitive issue.
3. Without water a man soon (to die).
4. Our Earth (to have) as much water as it ever (to have).
5. An ancient man (to need) something (to carry) and (to keep) water in.

Task VII. Total 10
Give three forms of the following irregular verbs.

1. бачити
2. чути
3. дивитися
4. розуміти
5. відчувати
6. кричати
7. пити
8. вчити
9. ходити

Task VII. Total 20
Translate in writing without dictionary (Time for the task – 10 min).

Is It Safe to Drink the Water?

Roughly 1,000 contaminants have been detected in the public water supply in the United States, and virtually every major water source is vulnerable to pollution. About half the U.S. population relies on surface water from rivers, lakes, and reservoirs that may contain industrial wastes and pesticides washed off fields by rain. The other half uses groundwater that may be tainted by chemicals slowly seeping in from toxic-waste dumps. In some areas where groundwater supplies are being gradually depleted, the chemical pollutants are becoming more concentrated.

Most pollutants are probably not concentrated enough to pose significant health hazards; however, there are exceptions. The most widespread danger in water is lead, which can cause high blood pressure and an array of other health problems. Lead is especially hazardous to children, since it impairs the development of brain cells. The U.S. EPA estimates that at least 42 million Americans are exposed to unacceptably high levels of lead, and the U.S. Public Health Service estimates that perhaps 9 million children are at least slightly affected by it.

The contamination comes from old lead poisoning and solder that have been used in plumbing for years. These materials are gradually being replaced in homes and water systems. Individuals may want to have their water tested for lead by an official lab. If the level is too high, they can investigate ways to deal with the problem or switch to bottled water for drinking and cooking. Even then, caution is called for: Some bottled waters contain many of the same contaminants that tap water does.

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MODULE IV
SOIL

CURRICULUM MATERIALS FOR MODULE 4
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 4

Предмет, цілі, мета навчальної дисципліни «англійська мова професійного спрямування».

Тема 1. Фонетика та граматика: Пряма і непряма мова (Direct and Indirect Speech)
Тема 2. Аналітичне читання: тексти за фахом з базових підручників. Реферування аутентичних текстів за фахом.
Тема 3. Усна практика: Asking the way. Діалогічне мовлення за вказаними темами. Аудіювання за темою модуля 4. Проектна робота по модулю 4.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольні роботи за матеріалами модулю 4 (зразки).
У результаті вивчення модуля 4 студент повинен
знати:
правила англійської фонетики; граматичний матеріал: Пряма і непряма мова (Direct and Indirect Speech)
вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 4
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 4

4.1.UNIT 7. SOIL

"Live now, pay later, and nothing for future"
from Greek philosophy

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. arid climate (n) – засушливий клімат
2. barren (n) – пуста порода
3. crucial (adj) – основний, важливий
4. deplete (v) – виснажувати, вичерпувати
5. failure (n) – невдача
6. food chain (n) – харчовий ланцюг
7. horizon (n) – шар, відкладення шару
8. infest (v) – кишіти, роїтися
9. moisture (n) – волога
10. parent rock (n) – материнська порода
11. perennial (adj) – багаторічний; той, що триває цілий рік
12. protein (n) – білок

13.resurgence (n) – відродження
14.rot (v) – гнити, псуватися
15.solid waste disposal (n) – звалище сміття
16.subsoil (n) – підґрунт
17.thrive (v) – квітнути, процвітати, пишно рости
18.vulnerable (adj) – уразливий
19.weed (n) – бур′ян
20.yield (n) – збір врожаю
yield (v) – давати врожай

II. Vocabulary check.
Activity 1. Give English equivalents of the following.

1. фізичне (хімічне, біологічне) вивітрювання
2. коріння рослин
3. поглинати вологу
4. злакові культури
5. бобові культури
6. засолення ґрунту
7. підтримувати життя
8. руйнувати органічну матерію
9. важливі нітрати
10.нові іригаційні проекти

Activity 2. Give Ukrainian equivalents of the following.

1. handful of soil
2. fertile soil
3. intensive farming techniques
4. to deplete the quantity
5. ecologically bankrupt
6. intensive farming
7. cash crop
8. subsistence farming
9. huge deluge
10.greenhouse effect

Activity 3. Match the following words with their explanations.

humus	a process by which the biological productivity of the land is so reduced as to lead to the spread of desert like conditions in arid and semiarid regions

erosion	a brown or black amorphous mass of decayed organic material found in soils
desertification	the weathering down and removal of soil, rock fragments and bedrock through the action of rivers, glacier, sea and wind
salinisation	any material added to the soil to supply essential nutrients for crop growth
fertilizers	the accumulation of highly soluble sodium, magnesium and potassium salts in a soil
eutrophication	to lessen greatly in quality, contents, power or value
deplete	the process of nutrient enrichment of an aquatic system
decay	to give or provide (smth. needed or asked for)
supply	to lose power, health and go bad

III. Grammar review

ПРЯМА ТА НЕПРЯМА МОВА

Правило узгодження часів часто діє при перетворенні прямої мови у непряму, при цьому, якщо пряма мова є питальним реченням, то треба дотримуватися таких правил:

1) Якщо питання починається з допоміжного або модального дієслова (тобто загальне питання), то непряме питання додається до головного речення за допомогою сполучників *whether* або *if*, що мають значення частки *чи*. Питальний знак опускається, та питальний порядок слів у прямому питанні замінюється порядком слів оповідального речення, тобто присудок ставиться після підмета.

e. g. He asked her, "Do you want to see the new film?"

He asked her whether (if) she wanted to see the new film.

I asked him, " Will you go there?" I asked him whether he would go there.

2) Якщо питання починається з питального слова або групи слів, то при перетворенні його у непряме питання відбуваються такі зміни:

Питальний знак не вживається, та питальний порядок слів у прямому питанні також замінюється порядком слів розповідного речення. Питальне слово або група слів, що стоять на початку питання, служать для приєднання непрямого питання до головного речення.

e. g. He asked me, "Where do you live?" He asked me where I lived.

He asked me, "Where is John?" He asked me where John was.

Приклади висловлювань прямою і непрямою мовами

Пряма мова (Direct Speech)	**Непряма мова(Reported Speech)**
Прямою мовою називається передача чийогось висловлювання.	Непрямою мовою називається передача змісту прямої мови у вигляді переказу.
She said to him “Come at 3 o’clock”. He said to me “Don’t go there”.	She asked him to come at 3 o’clock. He told me not to go there.
He said:”I know the answer”. He said to me, “I will do it tomorrow”.	He said that he knew the answer. He told me that he would do it the next day.
She asked me,”Have you written the paper?” He asked me, “Where do you live?” this (these) now here today yesterday tomorrow ago next week	She asked me if (whether) I had written the paper. He asked me where I lived. that (those) then there that day the day before the next day before the following week

Exercise 1.
Translate the following sentences

Вони запитали мене

- які книги я люблю читати.
- чия це книга.
- з ким я піду у кіно.
- з ким я розмовляв про це.
- коли я востаннє бачив брата.
- чи знаю я Пітера.
- чи був я у Києві.
- чи розмовляю я англійською.
- скільки іноземних мов я знаю.
- коли він повернеться додому.
- які фільми він любить дивитися.

Exercise 2.
Translate the following sentences into Indirect Speech

The girl said:

- I am a student.
- My name is Linda.
- I study history at the University.
- I live with my parents.

- I left school last year.
- I am nineteen.
- I was in France last year.
- I will be a historian.

Exercise 3.
Fill in *say, tell or ask* in the correct form

1. Please… me what you think of this problem.
2. He… that he couldn't reply to any of these questions.
3. He promised to … no more about the matter.
4. She stopped to …the time because she thought she was late.
5. He had taken an oath so he had to …the truth in the court.
6. She couldn't … for certain whether or not she would be staying.
7. "Could you help me with these bags?" she …me.
8. My parrot can …a few words in English.

Exercise 4.
Turn the following sentences into reported speech.

1. "I am visiting Greece", says the professor.
2. "I've never been to Paris before", says John.
3. "I don't speak Spanish", says Maria.
4. "My house is not far from the town centre", he says.
5. "Water boils at 100Cº", he said.
6. "Australia is a big country", he said.
7. "If I see him, I'll invite him to the party", he said.
8. "I saw a really bad car accident yesterday", he said to me.
9. "If I were rich, I would buy a house in Beverly Hills", she said.
10. "I've been living here for five years", she said.

IV Pre-text discussion
Activity 1. Do you know that:

- Soil is the result of the weathering of rocks.
- All living things are made of protein containing nitrogen.
- Intensive farming methods deplete the soil from nitrogen.
- The earth is losing 24 billion metric tons of topsoil every year through intensive farming methods.
- All soil contains some salt.
- Salt contained in soil is washed away when it rains.
- Evaporation from reservoirs and irrigation channels increases the salinity of the water.
- Fertilizers improve the quality of soil.
- Pesticides are absorbed by the crops.
- Pesticides often become concentrated on the food.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

V. Read, translate text 7.

Text 7.

"Soil"

We know that soil has been formed over thousands of years from the weathering of rock.

There are three types of weathering: physical weathering (where temperature changes cause the rock to expand and contract until it shatters into pieces), chemical weathering (where carbon dioxide and water form a weak acid that dissolves rocks such as limestone) and biological weathering (where the rock is broken down by the action of living things such as plant roots and bacteria).The composition of a typical soil is as follows: the top layer of the soil (topsoil) is rich in humus – a dark, fibrous material formed from decaying organic matter. Humus contains micronutrients such as nitrogen, minerals such as iron, and microorganisms that break down the organic matter. Humus absorbs moisture and binds the inorganic particles together. The quality (or fertility) of soil depends on the amount of humus in it – the organic content. Good quality topsoil is dark, moist and crumbly. The middle layer of the soil contains less organic material, but it is rich in minerals because these get washed down with the rain. The lower layer (subsoil) is made of inorganic material, similar to the parent rock which originally formed the soil. All living things are made of protein, which contains nitrogen. Without nitrogen, plants and animals cannot grow, because they cannot build new tissue. Traditional farming methods rotate cereal crops (which remove nitrogen from the soil) with leguminous plants (which replace nitrogen). Intensive farming methods, where cereals are grown every year, tend to deplete the soil of nitrogen. Repeated cropping and overgrazing (that is, putting too many cattle on a small area of grassland) cause erosion of the top layers of the soil. The essential nitrates are removed with the topsoil so the nitrogen cycle, which is crucial to the balance of nature, is broken (box 5).

The Painted Desert This landscape was created by the action of wind and moving water. The particles removed by these forces were deposited elsewhere and may have become part of the soil in that new location.

The earth is losing 24 billion metric tons of topsoil every year through intensive farming methods and deforestation. The end stage of this loss of topsoil is desertification, where all the organic and mineral content of the soil has disappeared, leaving only poor quality subsoil, which cannot support plant growth. About 20 million hectares of productive land become barren every year because of soil erosion. Thirty percent of the world's land surface is threatened with desertification. Another hazard of intensive farming is salinization, which is caused by perennial irrigation (that is, irrigation year after year without a break) in arid climates. All soil contains some salt, which is washed away when it rains. Where rainfall is minimal, the salt content of the soil is very high. Evaporation from reservoirs and irrigation channels increases the salinity of the water. When a new irrigation scheme raises the water table, salt from the soil dissolves in the water and rises to the surface. Unless the area is left fallow and unirrigated for a season so that the salty water can drain away, the land will become permanently salinized and unable to support plant life.

The quality of soil can be improved by adding fertilizers. But they cause environmental damage by a process called eutrophication. Excess nitrogen is washed out of the soil with the run-off after it rains. It passes into rivers and lakes, and encourages the growth of algae (seaweed) in the water and of wild plants on nearby land. Overgrowth of algae upsets the balance of nature in lakes and seas. Overcrowding on the banks causes the plants to rot and die. The air becomes contaminated with nitrous oxide which contributes to the greenhouse effect. Like nitrates, phosphates and potash are taken up by growing plants and returned to the soil in animal excreta. Artificial fertilizers add a few selected micronutrients, but

because they cause rapid plant growth they deplete the soil of other nutrients. Plants grown in artificial fertilizers are often tasteless and have a low nutritional value. They may be contaminated with chemical residues from the fertilizer manufacturing process. For both environmental and health reasons, many consumers today prefer to buy organic vegetables – that is, vegetables grown, without any artificial fertilizers.

Organic vegetables are also grown without pesticides. These chemicals kill insects and other pests but they are poisonous to many other living things as well – including man. Pesticides are absorbed by the crops and washed into the rivers and the sea. They often become concentrated by the food chain. Some pesticides accumulate in the human body and are secreted in breast milk. About 20,000 people in the world, including many children, die each year from accidentally drinking or inhaling pesticides,

Intensive farming methods which successfully increase crop yields in temperate zones often fail in tropical climates. There are several reasons for this. First, tropical countries usually have poor soil. Tropical heat kills microorganisms, so tropical soil has a lower organic content. This reduces its capacity to absorb water and makes it particularly vulnerable to erosion. When rain comes in the tropics, it usually arrives in a huge deluge after several months of no rain at all. The sandy topsoil is easily washed away, leaving soil of even poorer quality beneath. Second, there are more pests. In temperate areas, the cold winter kills off many of the weeds, fungi, insects and other pests. In tropical zones, there is no cold season. The pests thrive in the constant heat and frequently cause failure of crops. They spread easily from one field to another, so they cause particular damage when a single crop is grown intensively on a vast area of land. In general, tropical regions are more suited to subsistence farming (where a variety of small-scale crops is grown) than to the large-scale, intensive production of cash crops. Third, livestock in the tropics is heavily infested with parasites. The yield from both arable and cattle farming in tropical regions is usually one-quarter to one-third that of temperate regions, if the people try to introduce intensive farming methods, yields may increase temporarily, but they eventually fall still further and soil erosion accelerates.

A handful of soil looks inert and uninteresting. But good quality, fertile soil contains all the basic building blocks of life. Beneath the thin layer of soil lies a planet as lifeless as the moon. Intensive farming techniques increase crop yield in the short term but deplete the quality of the soil in the long term, particularly in tropical regions. At best, crop yields fall and at worst, the soil becomes ecologically bankrupt and unable to sustain crops at all. Intensive farming is yet another example of the "live now, pay later" philosophy that may ultimately cost us the earth.

VI. Comprehension check

Activity 1. Do the false/true activity

1. Plants and animals need nitrogen for growth.
2. Too much nitrogen causes too much growth of seaweed and wild plants nearby.
3. Intensive farming doesn't increase crop yield.
4. Plants grown in artificial fertilizers are usually tasty.
5. Pesticides are not absorbed by crops and washed into the rivers and seas.
6. Salinization occurs when perennial irrigation is undertaken in arid climates.
7. The pests thrive in the constant heat and cause failure of crops.
8. Livestock in the tropics isn't infested with parasites.
9. The quality (or fertility) of soil depends on the amount of humus in it.
10. Ten percent of the world's land surface is threatened with desertification.

Activity 2. Look through text 7 carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. The effect of repeated cropping and overgrazing on the soil is _____.
2. Good quality soil contains _____.
3. Desertification means that _____.
4. Organic fertilizers can be either _____.
5. Pesticides are chemicals which _____.
6. Although intensive farming increases crop yield, _____.
7. Salinization occurs when _____.
8. Plants and animals need nitrogen so that _____.
9. The amount of topsoil being lost every year because of deforestation and intensive farming _____.

VII. Discussion
Activity 1. Define the logical parts of text 7 entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 7.
Activity 3. Translate in writing and reproduce.

- What sort of Environmental problems can threat the well-being of the world population?
- We shouldn't forget that industrial pollution is only one part of a vast problem of the environmental hazards. Of great consequence is the polluted environment of areas where millions suffer from the effects of ignorance, poverty, lack of sanitary conditions, poor food and disease.
- Which of the agent of pollutants in those areas are most dangerous for man?
- First of all I must mention lack of sanitary conditions

- Especially in the developing countries where diseases, such as cholera, are transmitted from man to man by a polluted environment, polluted by human waste and unprotected water supply.
- So the most pressing problem is ignorance and lack of sanitary condition...
- Solid waste disposal in general is a serious problem. Refuse of all kinds help flies, mosquitoes, rodents and other disease agents to thrive, passing on illness to man.
- How many people are the victims of disease in developing countries?
- Millions fall victims to a wide variety of communicable diseases in places where the biological pollution from community waste is allowed to reach drinking water source and food.
- What kind of work is being carried on at present?
- The general problem of pollution is being vigorously attacked. Sanitation and sanitary education is being carried on among the population at large.

***

- Що ти шукаєш у тлумачному словнику?
- Я шукаю значення слів „засолення" та „випаровування ". Я звичайно розумію, що це пов'язано зі словами „сіль", „пара", але мені треба знати, що означають ці терміни.
- У тебе є спеціальний екологічний тлумачний словник?
- Справа у тому, що спеціального словника у мене немає, а у загальному тлумачному словнику значення цих термінів не дають.
- На жаль, я нічим не можу тобі допомогти, звернись до свого викладача з екології.
- Так, це те, що мені доведеться зробити.

Activity 4. Make up your own dialogues on the theme "Soil".

TEST/REVIEW

Task I. Максимальна кількість балів: 20 (Total 20)

a) Choose the correct word to complete the sentences. **(Total 10)**

b) Translate the sentences. **(Total 10)**

1. The professor asked what fertilizers … the quality of soil.

A) improves C) improved
B) had improved D) improving

2. He asked if soil … over thousands of years from the weathering of rock.

A) had formed C) will be formed
B) formed D) had been formed

3. The only thing you knew that the "Congress of Global warming … somewhere in the centre next month.

A) is being held C) had been held
B) would held D) would be held

4. He was interested how the quality of soil … increased.

A) have to be C) could be
B) would be D) was to be

5. I asked " How long … it take you to get there by car?"

A) does C) was
B) will D) did

Task II. Total 10

Give English or Ukrainian equivalents of the following.

1. шукати нафту
2. на душу населення
3. широке використання
4. поживний
5. підтримувати життя
6. to deplete quality
7. subsistence farming
8. Ви дійдете туди пішки.
9. Університет, який Ви шукаєте, знаходиться тут.
10. Їм знадобився рік, щоб навчитися грати в теніс.
11. soil contains
12. добра якість
13. ecologically bankrupt
14. huge deluge
15. руйнувати органічну матерію
16. злакові культури
17. коріння рослин
18. кишіти, роїтися
19. білок
20. злива, потік

Task III. Total 10

Turn the following into indirect questions.

1. Composition of soil in different parts of Ukraine is different. (I wanted to know).
2. A well-developed soil can support a healthy cover of vegetation. (The professor asked when).
3. Pedologists are scientists studying the soil. (We wanted to know if).

4. It took them two years to learn to speak English. (I asked).
5. The lowest layer resembles the parent material. (He asked what).

Task IV. Total 15
Translate from Ukrainian into Russian.

1. Вони запитали: „Чи всі проблеми, пов'язані з нашою участю у програмі вже вирішені?"
2. Викладач запитав: "Які з парникових газів найменш шкідливі?"
3. „Я можу попросити Вас не галасувати так сильно?" – запитала вона.
4. Він цікавиться: „Котра година?"
5. Викладач пояснив нам: „Ви повинні регулярно працювати над собою".

Task V. Total 5
Give three forms of the following irregular verbs.

1. бачити
2. плавати
3. бігти
4. мріяти
5. зберігати
6. ушкодити
7. в'язати
8. закривати
9. сваритися
10. мати справу

Task VI. Total 10
To use the correct verb form open the brackets.
1. Roots (to found) in both A and B horizons.
2. The red color of a soil (to indicate) the presence of iron compound in it.
3. Soil (to be formed) thanks to the decay of the rock.
4. Soil (to be) formed and destroyed constantly.
5. Most soils (to include) three major horizons.

Task VII. Total 10
Compose sentences with the following words.
1. soil, particles, organic, and, contains, mineral.
2. pedologists, scientists, soil, called, are, studying.
3. of, kinds, are, there, many, soils.
4. walk, ahead, lights, until, traffic, the, straight.
5. far, from, street, Bond, here, is,?

Task VIII. Total 20
Translate in writing without a dictionary (Time for the task – 10 min).

Characteristics of soils

The method and rate of soil formation differs throughout a body of soil. As a result, the soil develops layers. These layers are called soil horizons. Soil horizons may be thick or thin, and they may resemble or differ from the surrounding horizons. The boundaries between the layers can be distinct or barely noticeable.

Most soils include three major horizons. The upper two, called the *A* and *B* horizons, are the most highly developed layers. The A horizon is also known as topsoil. The lowest horizon, called the C horizon or the subsoil, is exposed to little weathering. Its composition resembles that of the parent material. Pedologists describe soils by the characteristics of the soil horizons, including (1) color, (2) texture, (3) structure, and (4) chemical conditions.

Color. Soils range in color from yellow and red to dark brown and black. The color of a soil helps pedologists estimate the amounts of air, water, organic matter, and certain elements in the soil. For example, a red color may indicate that iron compounds are present in the soil.

The poetry of the earth is never dead.
John Keats

4.2.UNIT 8. FORMATION OF SOIL

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. beneath (adv) – знизу
2. cereal (n) – злакові культури
3. decay (v) – гнити, розкладатися
4. deluge (n) – злива, потік
5. disease agent (n) – той, що розносить хвороби
6. fertilizers (n) – добрива
7. hookworm (n) – глист
8. humus (n) – чорнозем, перегній
9. livestock (n) – худоба, поголів'я худоби
10. overgrazing (adj) – надмірний випас худоби
11. pedologist (n) – ґрунтознавець
12. perennial irrigation (n) – багаторічне зрошення
13. residue (n) – осад
14. rodent (n) – гризун
15. soil (n) – ґрунт
16. shelter (n) – сховище

17.sustain (v) – підтримувати, підпирати
18.topsoil (n) – верхній шар ґрунту
19.water table (n) – дзеркало ґрунтових вод
20.weather (v) – вивітрювати

II. Vocabulary check.
Activity 1. Give English equivalents of the following.

1. поживний
2. рослинний білок
3. середня кількість опадів
4. багаторічне зрошення
5. гризуни рослин
6. верхній шар ґрунту
7. випас худоби
8. небезпечні глисти
9. злива
10. дзеркало ґрунтових вод

Activity 2. Give Ukrainian equivalents of the following.

1. amorphous mass
2. decay organic material
3. weathering down of soil
4. rock fragments
5. action of seas and winds
6. crop growth
7. essential nutrients
8. soil formation
9. land surface features
10. mineral portions of soil

III. Grammar review

Пряма і непряма мова (Direct and Indirect Speech)

Способи передачі непрямої мови

Типи речень	**Пряма мова**	**Непряма мова**
стверджувальне	He says,"I am happy". He says to us "I like football". She says,"I don't know	He says (that) he is happy. He says to us (that) he likes football. She says (that) she

	this rule”.	doesn’t know this rule.
наказове	She says,”Close the window, please”. Mary says to Mike,”Don’t close the door”. The officer orders the soldiers,”Don’t talk!”	She asks me to close the window. Mary tells Mike not to close the door. The officer orders the soldiers not to talk.
Загальне питання	The tourist asks me,”Do you know the city well?” He asks,”Is it raining?” The manager asks,”Are there any people at the office?”	The tourist asks me if I know the city well. He asks if it is raining now. The manager asks if there are any people at the office.
Спеціальне питання	I ask them,”Where does John live?” They ask,”What’s the matter?” We ask them,”When shall we meet?” My friend asks,”Who called you yesterday?”	I ask them where John lives. They ask what the matter is. We ask them when we shall meet. My friend asks who called me yesterday.

Дієслова, що вводять непряму мову.

add	додавати	offer	пропонувати
advise	радити	promise	обіцяти
allow	дозволяти	protest	протестувати
describe	описувати	remark	зауважувати
explain	пояснювати	reply	відповідати
complain	скаржитися	remind	нагадувати
continue	продовжувати	recommend	рекомендувати
inform	повідомляти	refuse	відмовляти
insist	наполягати	suggest	пропонувати
note	помічати	think	думати
observe	спостерігати	warn	попереджувати
order	наказувати	wonder	цікавитися

Exercise 1.
Turn the following sentences into Indirect Questions. Omit question marks where necessary.

1. Where did I leave my glasses? (I wonder…)
2. Is he planning to call a meeting? (Did you know…)
3. Have they ever been abroad? (Do you know…)
4. When are you leaving? (I want to know…)
5. Who left that message on our answerphone/ (She wondered…)

Exercise 2.
Turn the following into Direct Speech.
Mr. Brown said good morning to everyone and thanked them all for coming. He said that he expected that they were all wondering why he had called the meeting, and promised that he wouldn't keep them in suspense much longer. He explained that a large multinational company had offered to buy the factory for $10 million and he went on to invite people to give their views on whether or not they should sell. He warned them that it was a very important decision they had to make and urged them to think about the matter very carefully as everyone's future could depend on it.

Exercise 3.
Translate into English.
1. Вона каже, що її мати працює в школі.
2. Вона сказала, що її мати працює в школі.
3. Він запитав мене, де я купив цю книгу.
4. Він сказав, що влітку поїде до моря.
5. Я думав, що ти зайнятий.
6. Ми знали, що він вдома.
7. Він пояснив, як він став мільйонером.
8. "Я можу допомогти тобі написати реферат", сказав він після уроків.
9. "Ну, добре. Я зробив помилку. Тепер жалію. Вибачте."- сказав наш одногрупник.
10. Вони хотіли знати, чи ми маємо якусь інформацію, яка б допомогла їм скоротити витрати на екологію.

IV Pre-text discussion
Activity 1. Do you know that:
- Different soil types can be classified into two broad categories.
- Soils formed in grasslands are known as chernozem soil.
- Soils formed in forests are known as podzol soils.
- Soils are constantly being formed and destroyed.
- Soil is formed slowly and destroyed easily.

Activity2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The essential nitrates are removed with the topsoil.
2. A handful of soil looks inert and uninteresting.
3. Livestock in the tropics is heavily infested with parasites.

V. Read, translate text 8.

Text 8.

How soil is formed

Soil is an important natural resource that covers much of the earth's land surface. Most life on earth depends upon the soil as a direct or indirect source of food .Plants are rooted in the soil and obtain nutrients (nourishing substances) from it. Animals get nutrients from plants or from animals that eat plants. Certain microbes in the soil cause dead organisms to decay, which helps return nutrients to the soil. In addition, many kinds of animals find shelter in the soil.

Soil contains mineral and organic particles, other plant and animal matter, air and water. The contents of soil change constantly. There are many kinds of soils and each has certain characteristics, including color and composition. The kind of soil in an area helps determine how well crops grow there. Soil forms slowly and is destroyed easily, it must be conserved so it can continue to support life.

Soil scientists, called pedologists, use the term “polypedons” for the bodies of individual kinds of soil in a geographic area. Polypedons can be indefinitely large but some have a surface area of only about 10.8 square feet (1 square meter). Some polypedons measure less than 5 inches (13 centimeters) deep. Others are more than 4 feet (1.2 meters) deep.

Soil begins to form when environmental forces break down rocks and similar materials that lie on or near the earth's surface. Pedologists call the resulting matter parent material. As soil develops through the centuries, organic material collects, and the soil resembles the parent material less and less. Glaciers, rivers, wind, and other environmental forces may move parent material and soil from one area to another.

Soils are constantly being formed and destroyed. Some processes, such as wind and water erosion, may quickly destroy soils that took thousands of years to form.

Soil formation differs according to the effects of various environmental factors. These factors include (1) kinds of parent material, (2) climate, (3) land surface features, (4) plants and animals, and (5) time.

Soil formation depends on several factors that act together. They include (1) the rock from which the soil forms, (2) the climate, (3) plants and animals, and (4) time. Soils form slowly and continuously.

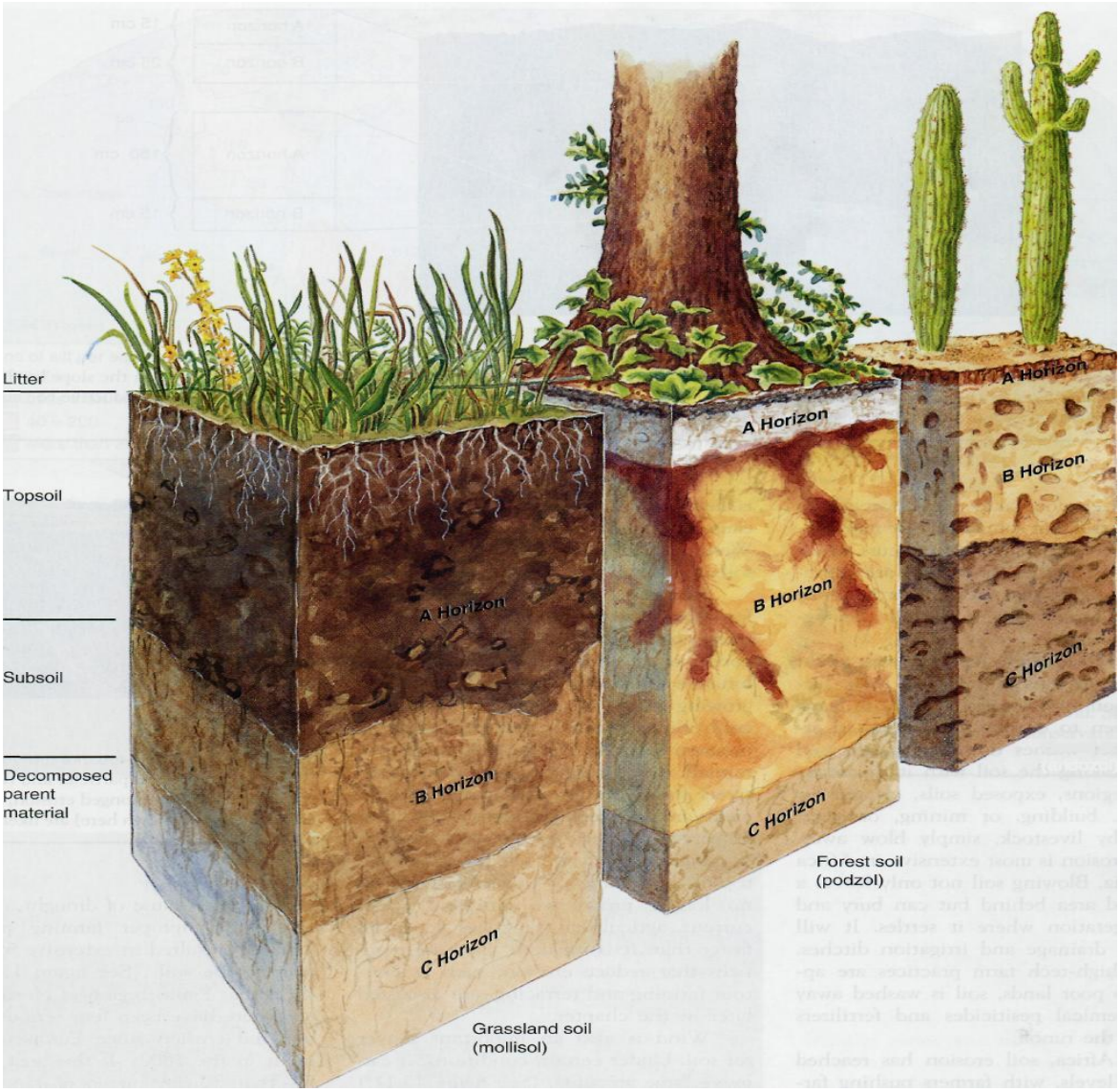
Characteristics of soils

The method and rate of soil formation differs throughout a body of soil. As a result, the soil develops layers. These layers are called soil horizons. Soil horizons may be thick or thin, and they may resemble or differ from the surrounding horizons. The boundaries between the layers can be distinct or barely noticeable.

Most soils include three major horizons. The upper two, called the *A* and *B* horizons, are the most highly developed layers. The A horizon is also known as topsoil. The lowest horizon, called the C horizon or the subsoil, is exposed to little weathering. Its composition resembles that of the parent material. Pedologists describe soils by the characteristics of the soil horizons, including (1) color, (2) texture, (3) structure, and (4) chemical conditions.

Color. Soils range in color from yellow and red to dark brown and black. The color of a soil helps pedologists estimate the amounts of air, water, organic matter, and certain elements in the soil. For example, a red color may indicate that iron compounds are present in the soil.

Texture of a soil depends on the size of its mineral particles. Sands are the largest particles. The individual grains can be seen and felt. Silts are just large enough to be seen, and clays are microscopic. Pedologists divide soils into textural classes according to the amounts of sand, silt, and clay in a soil. For example, the mineral portions of soils classified as loam contain from 7 to 27 per cent clay and less than 52 per cent sand. In silty clay, more than 40 per cent of the mineral particles are clay, and more than 40 per cent are silt. Texture helps determine how thoroughly water drains from a soil. Sands promote drainage better than clays.



Major Soil Types There are thousands of different soil types, but many of them can be classified into two broad categories. Soils formed in grasslands are known as chernozem soils and have a deep A horizon. The shallow B horizon does not have sufficient nutrients to support root growth. In forest soils, known as podzol soils, the A horizon is thinner, and leaching results in many nutrients in the B horizon. Thus roots are found in both the A and B horizons

VI. Comprehension check

Activity 1. Do the false/true activity

1. Soils range in colors.
2. Red color of soil indicates presence of iron compounds.
3. The methods of soil formation don't differ.
4. Soils forms quickly and endlessly.
5. Sands promote drainage better than clays.
6. Most soils include six horizons.

7. Wind and water quickly destroy soils.
8. Animals get nutrients from plants but not from animals that eat plants.
9. Various environmental factors influence on soil formation.
10. Soil horizons characterize soil.

Activity 2. Look through text 8 carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. A and B horizons are the most _____.
2. Pedologists describe soil by the characteristics of _____.
3. The mineral portion of soils are classified as _____.
4. Soil formation depends on _____.
5. Soil formation differs according to _____.
6. The kind of soil help determine _____.
7. Soil scientists are called _____.
8. Soil microbes cause dead organism to _____.
9. Many animals find shelter _____.
10. Soil is a direct or indirect _____.

VII. Discussion

Activity 1. Define the logical parts of text 8 entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 8.
Activity 3. Translate in writing and reproduce.

***

- Вибачте, можете мені пояснити значення термінів „засолення" та „випаровування"?
- Звичайно, я зроблю це із задоволенням. Земля втрачає 24 мільярди метричних тонн верхнього шару щорічно через інтенсивні методи землеробства. "Засолення" – це накопичення розчинних солей в грунті або на його поверхні. „Випаровування" – це процес поглинання енергії, в результаті якого рідина змінює свій стан і стає газом.
- А що таке метрична тонна, чому вона дорівнює?
- Метрична тонна дорівнює 1016 кг.
- Дякую. Ви мені дуже допомогли.

***

- Що ти знаєш про інтенсивне землеробство?
- Небагато. Я чула, що інтенсивні методи землеробства значно підвищують врожайність.
- Вони підвищують врожайність у всіх місцях?
- Наскільки мені відомо – ні. Вони дуже успішні в районах з помірним кліматом (temperate zones) та негативні в районах з тропічним кліматом.

- А чому?
- На це є кілька причин. Ну, перш за все в країнах з тропічним кліматом зазвичай виснажений (неродючий) ґрунт. Тропічна жара вбиває мікроорганізми, що зменшує здатність всмоктувати воду, і це призводить до подальших проблем.
- До яких саме?
- Пестициди, які широко застосовуються при інтенсивному землеробстві, дуже добре почуваються в жарі, їх стає багато, і це призводить до загибелі врожаю.
- Дякую. Тепер, коли ти пояснила, мені зрозуміло.

Activity 4. Make up your own dialogues on the theme "Soil formation".

VIII. Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. A well-developed soil can support a healthy cover of vegetation.
2. Pedologists are scientists studying the soil.
3. Soil formation differs according to the environmental factors effects.
4. Soil is an important natural resource that covers much of the earth's surface.
5. Soil is formed thanks to the decay of the rock.
6. The term "polypedous" is used for the bodies of individual kinds of soil in different geographical regions.
7. The color of a soil helps to estimate the amount of air, water, organic matter.
8. The red color of a soil indicates the presence of iron compound in it.
9. The lowest layer resembles the parent material.

Activity 2. Translate into English using the dictionary.

Природно-ресурсною базою розвитку сільського та лісового господарства є земля – найбільш цінне і незамінне багатство країни.

Ґрунтом називаються видозмінені під впливом живих організмів, перш за все – зелених рослин, поверхневі шари земної кори, котрі відрізняються від гірських порід складом мінеральної маси, значним вмістом специфічних органічних речовин(гумусу) і мають важливу відмінність – родючість, тобто здатність постачати рослинам необхідні для їх росту поживні речовини, воду і повітря. Ґрунти є одночасно і результатом життєдіяльності зелених рослин, і умовою їхнього існування. В Україні налічується багато різновидів ґрунтів, які відрізняються між собою мінералогічним складом, вмістом гумусу та поживних елементів, фізичними та хімічними властивостями.

Шкідливий антропогенний вплив, а також розгул стихій, природних та посилених людиною, завдають ґрунтам величезної , інколи непоправної шкоди. Це, насамперед, водна і вітрова ерозія, погіршення ґрунтової структури, механічне руйнування та ущільнення ґрунту, постійне збіднення на гумус та поживні речовини, забруднення ґрунту мінеральними добривами, отрутохімікатами, мастилами та пальним, перезволоження та засоленість земель.

IX. Long-term project work.
Prepare projects on the following topics.

1. Composition of soils in different parts of Ukraine and its influence on vegetation.
2. Soil conservation problem in Europe and Ukraine.
3. Soil pollution by radiation (The influence of Chernobyl tragedy on soil pollution and its future).

X. Spoken English (Every day English)

1. **Remember!**

Дуже важливо уміти показати дорогу тій чи іншій людині, якщо вона не знає вашого міста. Якщо Ви приїхали у незнайому країну або місто, у Вас неодмінно виникнуть такі питання: „Як добратися до...?", „Як пройти до...?" тощо. Тому тема "Asking the way", можна сказати,- одна з найважливіших.

Перш за все Вам слід запам'ятати три моделі:

How can I get to…?	Як пройти до...?
How long does it take me to get to…?	Скільки треба часу, щоб добратися до...?
It takes you…	Вам знадобиться...

А все інше залежить від того „Куди?" та знання граматичних часів.

It takes me	Мені треба
It took me	Мені знадобилось
It will take me	Мені знадобиться

2. **Speech patterns.**

How can I get to…. Asking the way.

It takes me an hour to get there	Мені потрібна година, щоб добратися туди.
It took them two years to learn to play tennis	Їм знадобився рік, щоб навчитися грати в теніс.
It will take you a quarter of an hour to report	Вам знадобиться 15 хвилин, щоб зробити доповідь.

How long does it take us to get there by car?	Скільки нам потрібно часу, щоб добратися туди на машині?
How long will it take our tourists to do shopping?	Скільки часу знадобиться нашим туристам, щоб зробити покупки?
How long did it take Alex to write the module test?	Скільки часу знадобилося Алексу, щоб написати модульний тест?
How can I get to the nearest bank?	Як добратися до найближчого банку?
How do I get to the underground station "Moskovsky Prospect"?	Як добратися до станції „Московський проспект"?
How can we go to the Arts Museum?	Як пройти до Музею Мистецтв?
You have been most helpful.	Ви мені дуже допомогли.
You have been most polite.	Ви дуже люб′язні.
You have been most kind.	Ви дуже добрі.
The bus stop is over there.	Зупинка автобуса там.
The supermarket is not far from there.	Супермаркет недалеко звідси.
The State library is near by.	Державна бібліотека поблизу.
The University you are looking for is near here.	Університет, що ви шукаєте, знаходиться тут.
The parking lot is opposite the hotel I stay at.	Паркування напроти готелю, у якому я зупинився.
The Underground station is within 5 minutes walk.	Метро в п'ятьох хвилинах ходьби.
The bank is next to the drugstore.	Банк за аптекою.
The nearest post-office is round the corner.	Найближча пошта за рогом.
I go there **by** bus.	Я їду туди автобусом .
You can go there **by** local train.	Ви можете доїхати туди електричкою.
He gets there **by** Metro.	Він добирається туди на метро.
You can reach this place **by** air.	Ви можете добратися до цього місця літаком.
You can go there **on** foot.	Ви дійдете туди пішки.

Excuse me. How can (do) I get to… To go by bus (trolley-bus, air, water…) To go on foot. To walk. To get in (off) a bus (trolley-bus). Over there, over here. Near there, near here. The traffic light. To cross. To pass. Nearby.

Is there a bus to the center?	До центру іде автобус?
Is there a tram stop nearby?	Тут поблизу є зупинка трамваю?
Is there a gas station near here?	Чи є тут заправка?

3. Dialogues to be remember

***

- Excuse me. I want to see Mr. Pavlov.
- Mr. Pavlov's office is on the 11th floor. Take the lift, please
- Thank you, very much. You have been most helpful!
- It's my duty to help you.

***

- Is Broad Street far from here?
- Turn left, there you'll see a parking lot. Take the second turning on your right and you are in Broad Street.
- Thanks a lot.

***

- Is this the right way to Barford?
- I'm afraid not. You should drive in the opposite direction.
- How long will it take us to come to Barford?
- At speed of 90 km/hour it will take you around 7 hours.
- Oh, no!
- I am sorry.

***

- Excuse me. Where is the nearest drugstore?
- Look here, go down this street two blocks straight ahead and you'll see the drugstore which is the nearest from here as far as I know.
- Thanks a lot.
- Don't mention it.

***

- Hi! Glad to see you!
- Hi! I heard you had moved to a new apartment.
- Yes. And I am very happy and I'd like to invite you to my housewarming party. Will you come?
- I will. But…
- What but?
- But I don't know how to get to your place.
- Look. Walk straight ahead until the traffic lights, then pass the road and turn left, one block down that street and you'll find yourself at my place. By the way, here is my visiting card with my phone numbers. Just in case!
- Thank you ever so much. I'll call you up and you'll tell me the day and time of your housewarming party.
- Hi!
- Hi!

4. Translate in writing

***

- Вибачте мені, як пройти до гуртожитку № 1 ХНАДУ?
- Вниз по цій вулиці, потім поверніть ліворуч біля світлофору і ви побачите молодіжний парк. Ідіть вниз від Молодіжного парку нікуди не звертаючи упродовж 3 хвилин. І ви біля гуртожитку № 1.
- Дякую.
- Бажаю успіху.

***

- Вибачте мені. Я вперше у Вашому місті. Як я можу добратися до ХНУ?
- Ви майбутній студент?
- Так. Я збираюся подати документи у цей університет.
- Який збіг! Я там навчаюся на географічному факультеті.
- Дивіться. Йдіть вниз по цій вулиці до майдану. Ви побачите його праворуч. Доречі, це третій за розміром майдан в Європі. Йдіть по цьому майдану угору до пам′ятника Леніну. Йти треба прямо, нікуди не повертаючи. Праворуч від Вас буде готель „Харків ”, ліворуч ви побачите сквер, а потім побачите дуже гарну споруду – це і є ХНУ ім. В.Н.Каразіна.
- Доречі, біля університету ліворуч ви побачите пам′ятник засновнику – В.Н. Каразіну.
- Дуже дякую. Ви мені дуже допомогли.
- Прошу. Бажаю Вам вступити до університету!

5. Situation for spontaneous projects.

1. You are invited to the publishing house of newspaper “Digest”, as the winner of their project “Let’s defend the future generations”. You have never been to this office. So you should go there and then you find out that you have lost the paper where you put down the address and telephone number.
2. A friend of yours has bought a new apartment and invites you to a housewarming party. But he lives in another city and explains how to go to this city and to find the house he lives in.
3. You have come to London to participate in the “Congress of Global Warming”. It’s your first visit to London, but you are at a loss because nobody meets you at the airport. The only thing you know that the Congress is to be held somewhere in the centre.

TEST-CONTROL FOR MODULE IV.

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. The professor underlined that soil … the result of the weathering of rocks.

A) is C) will

B) was D) had been

1. He knew that all living things … of protein containing hydrogen.

A) will be made C) were made
B) is made D) was made

2. She said that salt contained in soil … away when it rained.

A) was washed C) are washed
B) is being washed D) will be washed

3. They excused themselves and said they … to see our ecology experiment.

A) want C) would want
B) wanted D) are wanted

4. She asked where the nearest drugstore ….

A) is C) are
B) will D) was

Task II. Total 20

Give English or Ukrainian equivalents of the following.

1. Поглинати вологу
2. Злакові культури
3. Засолення ґрунту
4. Handful of soil
5. Huge deluge
6. Greenhouse effect
7. Нові іригаційні проекти
8. Бобові культури
9. Надмірний випас худоби
10. Харчовий ланцюг
11. Збір врожаю
12. Скільки Вам потрібно часу?
13. Ви дуже люб’язні.
14. Банк за аптекою.
15. Чи є тут заправка?
16. Він добирається туди на метро.
17. Зупинка автобуса там.
18. Мені потрібна година.
19. Методи утворення ґрунту
20. Земля різниться за кольором

Task III. Total 10

Turn the following into indirect questions.

1. The quality of soil can be improved by adding fertilizers. (He was interested)
2. Soil has been formed over thousands of years from the weathering of rock. (He asked when …).
3. Fertilizers improve the quality of soil. (The professor asked what …).
4. I heard you had moved to a new apartment. (I wanted to know).
5. How long does it take you to get there by car. (I asked).

Task IV. Total 15

Translate from Ukrainian into English

1. „Я можу запитати у Вас, де інститут екологічних проблем?", запитала вона.
2. "Я можу допомогти тобі написати реферат з теми „Ґрунт", сказала вона, після того як він провалився на екзамені.
3. Він запитав: "Від чого залежить структура ґрунту?".
4. Моя подруга запитала: " У тебе є екологічний словник?".
5. Вона запитала: "Що ти знаєш про інтенсивне землеробство?".

Task V. Total 5

Give three forms of the following irregular verbs.

1. їхати (залишати)
2. знати
3. тримати
4. рости
5. давати
6. сваритися
7. мести (замітати)
8. рвати
9. мати справу
10. тримати парі

Task VI. Total 10

Put the verbs in brackets in the correct form.

1. Soil (to contain) mineral and organic particles.
2. Scientists studying soil (to be called) pedologists.
3. Soil (to be) constantly being formed and destroyed.
4. Soil formation (to depend) on several factors that (to act) together.
5. There (to be many) kinds of soils.

Task VII. Total 10

Compose sentences with the following words.

1. Black, brown, dark, and, to, yellow, from, in, color, range, soils.

2. 5, is, within, the, station, minutes, underground, walk.
3. How, it, long, will, to, do, our, tourists, shopping, take.
4. Horizons, layers, these, called, are.
5. Clays, better, than, promote, sands, drainage.

Task VIII. Total 20

Translate in writing without a dictionary (Time for the task – 10 min).

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have slight limitations that restrict their use.

Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, e, w, s, or c, to the class numeral, for example, 2e. The letter e shows that the main hazard is the risk of erosion unless close-growing plant cover

is maintained; w shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); s shows that the soil is limited mainly because it is shallow, droughty, or stony; and c, used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry. In class 1 there are no subclasses because the soils of this class have few limitations. Class 5 contains only the subclasses indicated by w, s, or c because the soils in class 5 are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, forestland, wildlife habitat, or recreation.

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MODULE 5
ENERGY AND ENVIRONMENT

CURRICULUM MATERIALS FOR MODULE 5
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 5

Тема1. Article. Special cases**.** Passive Voice.Future Tenses. Future Simple. Future Continuous**.**

Тема 2. Аналітичне читання: тексти за фахом з базових підручників.

Тема 3. Усна практика: Invitation. Appearance.Реферування аутентичних текстів за фахом. Діалогічне мовлення за вказаними темами.Аудіювання за темою модуля 5. Проектна робота за модулем 5.

Тема 4. Індивідуальне читання:

Аутентичні тексти за фахом.

Контрольна робота за матеріалами модулю 5.

У результаті вивчення модуля 5 студент повинен

знати: Утворення та вживання Passive Voice. Future Tenses. Future Simple. Future Continuous**.**

вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 5
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 5

5.1 Unit 9. Energy and Civilization.

"Without energy
there is no life and no future"
(Ralf Waldo Emirson, 1836)

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. available (adj) – доступний, той, що є у наявності
2. conductive (adj) – сприятливий
3. congregate (v) – накопичуватися, збиратися
4. deposit (n) – поклад, родовище
5. discard (v) – викидати, відкидати
6. dwelling (n) – житло, будинок
7. extensively (adj) – широко, на всі сторони
8. fairly (adv) – фактично, справедливо
9. flare (v) – розширювати, розсовувати
10. fossil (n) – скам′янілість, копалина
11. goods (n) – товари
12. input (n) – внесок, вхід
13. maintain (v) – підтримувати, заохочувати
14. muscle (n) – мускул, м′язи
15. prior (prep) – раніше, перед, до
16. prosper (v) – процвітати
17. requirement (n) – вимога, необхідна умова
18. reserve (n) – запас, резерв
19. survive (v) – зберегтися, вціліти, пережити
20. store (v) – постачати, запасати, відкладати
21. supply and demand (n) – попит та пропозиція
22. switch (v) – переходити, перемикатися
23. tool (n) – інструмент, механізм
24. ultimately (adv) – в решті решт

25.view (v) – оглядати, оцінювати, розглядати
26.widespread (adj) – широко розповсюджений
27.refinery (n) – очисний завод
28.lubricant (n) – мастило, речовина для змащування

II. Vocabulary check.

Activity 1. Give Ukrainian equivalents of the following.

1. fossil remains
2. muscle power
3. wind power and water powered devices
4. coal deposits
5. human and animal labor
6. steam engines
7. coal reserves
8. widespread use
9. energy consumption
10. population growth

Activity 2. Give English equivalents of the following.

1. шукати нафту
2. на душу (населення)
3. широке використання
4. первісні люди
5. паровий двигун
6. щільність населення
7. споживання енергії
8. віддалене минуле
9. доступні вугільні родовища
10. мускульна сила

Activity 3. Match the following words with their explanations.

to involve	satisfactory, satisfying a requirement
to convert	for a long line or series
possessing	length in time
predominantely	smb. smth. with, supply or provide
to furnish	to be superior in number, place, influence, strength
span	course or movement of events
currently	to be still present after a part has gone
to remain	to change from one form to another

long-range	to own, to have
adequate	to be caught or mixed up

Activity 4. Read, translate and memorize the following special terms.

Microorganism, biomass, sunlight, fossil fuel, steam, coal, oil, wastes, photosynthesis, food, herbivorous, ecosystem, substance, muscle, virgin, lubricant.

III. Grammar review

Article. Special cases.

	Zero article	**Definite article**
Transport	*Travel by sea/boat/train/air/car, etc.*	We took the train to the airport. You can buy a ticket on the bus.
Communications	*Contact by phone; send by post*	He's on the phone. The post is late today.
Times of day	*At dawn/daybreak/midday/lunch time/sunset/night*	The telephone rang in the middle of the night. We met in the morning/afternoon/evening.
Days, months, seasons	*On Sunday, in September, in summer*	On the third Sunday of the month In the summer of 2001
Countries	*Jordan, Switzerland*	Plural countries and countries with a word like republic or state in their name take the definite article; the Philippines, the Czech Republic
Institutions	*With zero article the focus is on the general purpose of the institution: he's at school/college/university.(studying)* *She's been taken to hospital (for*	With an article, the focus is on some other aspects of the institution: He's a caretaker at the university.

treatment)	The hospital is opposite the school.
He spent a year in prison.(as punishment)	The prison was built last century.

Exercise 1.
Complete the following text by adding *a/an, the* or leaving a blank (zero article)
…Maldives is…archipelago of 1,190 small coral islands situated in …Indian Ocean south-west of…Sri Lanka. None of…islands rises above 1.8m, making…country …lowest place on Earth. As…result,…country is threatened by…rise in sea level caused by…global warming, and …sea wall has been built around…capital island,…Male.

Exercise 2.
Fill a/an/the where necessary.

1. …Tower of London is on…north side of…Thames.
2. He has visited a number of places including… USA, … Middle East and…Asia.
3. …University of Cambridge is one of…most famous in…United Kingdom if not in…Europe.
4. New Year celebrations are held in…Trafalgar Square in…London and in…Times Square in…New York.
5. …Sunset Boulevard is…most famous street in…Hollywood.
6. Many people go trekking in…mountains like…Alps or …Himalayas.
7. …Nile flows from near…Lake Victoria to…Mediterranean.
8. Of…Seven Wonders of the World, I've only visited …Pyramids.
9. When…Berlin Wall was pulled down it was a great moment in…history.
10. …English spend their holidays in hot countries because they enjoy going to…beach.

Стан (Voice)
Типи станів

Англійське дієслово має два стани: активний стан (The Active Voice) і пасивний стан (The Passive Voice).

Активний стан (The Active Voice)	**Пасивний стан (The Passive Voice).**
Дієслово означає дію, яку виконує підмет.	Дієслово означає дію, яка спрямована на підмет.
Vehicles emit exhaust fumes.	Exhaust fumes are emitted by vehicles.

Утворення часів пасивного стану (The Passive Voice)

Якщо підмет означає предмет або особу, на які спрямована дія іншого предмета або особи, то дієслово-присудок ставиться у формі пасивного стану.

Речення з дієсловом — присудком у формі пасивного стану вживаються в англійській мові тоді, коли головний інтерес для співрозмовників становить особа або предмет, на які спрямована дія, а не той, хто виконує дію, як у реченнях з дієсловом у формі активного стану. Часи пасивного стану мають в основному ті самі значення, що й відповідні часи активного стану.

Зведена таблиця часів пасивного стану

	Simple (Indefinite)	Continuous	Perfect
Present	I am *He / She / It* } is } asked *We / You / They* } are питають взагалі, завжди	I am *He / She / It* } is } being asked *We / You / They* } are питають зараз	I have *He / She / It* } has } been asked *We / You / They* } have вже спитали
Past	I *He / She / It* } was } asked *We / You / They* } were спитали колись	I *He / She / It* } was } being asked *We / You / They* } were питали у той момент	I *He / She / It* } is } had been asked *We / You / They* } are до того моменту вже спитали
Future	*I / We* } shall } be asked *He / She / It / You / They* } will спитають коли-небудь	——	*I / We* } shall } have been asked *He / She / It / You / They* } will спитають до того часу в майбутньому

Future-in-the-Past

I, *We*	should		*I*, *We* should
	be asked		have been asked
He, *She*, *It*, *You*, *They*	would		*He*, *She*, *It*, *You*, *They* would
спитають коли-небудь			спитають до того часу в майбутньому

Exercise 3.
The following passage describes the production of paper. Put the words in brackets into the appropriate form, using the passive when necessary:

From trees to pulp

The trees … (transport) to the paper mill by lorry, train or ship. First the bark … (remove). This … (burn) at a later stage so that energy can … (generate) for the paper-making process. Then the logs … (cut) into chips and … (cook) under high pressure for four hours to make paper pulp. Next the pulp … (bleach) to … (remove) dirt spots and … (improve) its ageing properties.

From pulp to paper

The manufacturing process also … (require) chemicals to strengthen the paper.

The fibres … (mix) with additives and … (dilute) with water. This mixture … (spray) onto the paper machine where it … (press), then … (dry) and … (wind) onto one large reel which … (weigh) up to 20 tons. Each part of the process … (control) by computers which automatically … (correct) any errors.

Exercise 4.
Look at the notes, write a report .Use the passive:

Yet again we experienced an earthquake last night

A remote area in northern Spain/shake/by an earthquake last night. Several villages/totally destroy/and many people/leave/homeless. The total extent of the damage/still not known/ but luckily few casualties/report as people/warn/of the danger earlier and many villages/ evacuate. Victims of the earthquake now/offer/shelter in local churches/where food and drink/provide.

Exercise 5.
Translate into English:

1.В 1963 році, коли алюміній вперше використали для виготовлення одноразових банок для напоїв, в США випустили більше 2 мільярдів банок – по п’ять на людину.

2. Води озера Байкал – найбільшого прісноводного озера у світі – постійно забруднюються шкідливими відходами паперово-целюлозного комбінату.

3. Величезна кількість енергії потрібна для випуску алюмінію.

1. Крім того, більша частина алюмінію видобувається з бокситових покладів, які знаходяться у тропічних країнах.

5.Величезні площі вологих тропічних лісів знищуються зараз тільки задля видобутку бокситів.

5. Викопне паливо, яке дуже забруднює повітря, у майбутньому буде замінено новими чистішими видами.

6. Вам запропонували роботу, про яку я вам говорив?

7. Кількість сміття у великих містах катастрофічно збільшується, і з цим потрібно боротись.

8. Подивіться, що мені дали!

9. Сучасні сміттєспалювальні високотехнологічні заводи скоро будуть будуватись на Україні.

Exercise 6.

Complete the following passage with appropriate passive forms of the verbs in brackets:

A new campaign … (launch) earlier this year by the UK government which aims to reduce the amount of domestic waste. Households … (encourage) to recycle certain waste products and to sort and prepare others for collection at specific sites. From there they … (take) to special waste treatment plants where special machinery will process them for reuse as recycled material. In Britain today, when the contents of the average household dustbin … (analyse), we find that, in terms of weight, 35% of the total … (compose) of paper and cardboard, 22% of kitchen waste, 12% of plastics with glass, dust and ashes each representing a further 10%.

There are in fact only a few items of domestic waste that cannot … (recycle). One common example is disposable nappies which, as their name suggests, … (design) to be thrown away after use. However, a lot of progress could … (make) to reduce the amount of kitchen waste most of which can … (transform) into a useful garden fertiliser. Indeed, if more people chose to do this then the weight of the average dustbin … (reduce) quite significantly.

IV Pre-text discussion

Activity 1. Do you know that:

- The Chinese started using gas and oil as early as 1000 B.C., yet these resources remained virtually untapped until recently.
- The principal use of oil production was to make kerosene a fuel for lamps.

- At the beginning of the 20th century the United States had only 8000 automobiles, by 1920 this figure reached 8 million.
- Europe and North America were rural before the Industrial Revolution.
- Widespread use of coal in cities of Europe resulted in increased air pollution during the Industrial Revolution.
- Historically, the first fossil fuel to be used extensively was coal.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following:

1. Before machines replaced muscle power the major energy sources for the world had been fossil remains.
2. Fossil remains are the remains of plants, animals, microorganisms form the distant past.
3. At the times of Industrial Revolution the source of energy for steam engines was wood or coal.

V. Read, translate and discuss text 9A.

Text 9A.

Fossil Fuels and the Industrial Revolution

Fossil fuels are the remains of plants, animals, and microorganisms that lived millions of years ago. (The energy in these fuels is stored sunlight, just as the biomass of wood represents stored sunlight.) During the Carboniferous period, 275 to 350 million years ago, conditions in the world were conducive to the formation of large deposits of fossil fuels. (See figure 1*)* Ever since machines replaced muscle power, the major energy sources for the world have been fossil remains from the distant past.

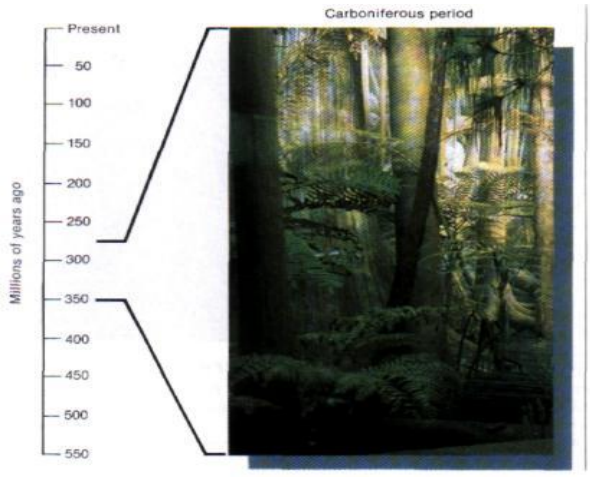


Figure 1. Carboniferous Period Approximately 300 million years ago, this kind of ecosystem was common throughout the world. Plant material accumulated in these swamps and was ultimately converted to coal.

Historically, the first fossil fuel to be used extensively was coal. In the early eighteenth century, regions of the world that had readily available coal deposits were able to switch to this new fuel and participate in the major cultural change known as the **Industrial Revolution.** The Industrial Revolution began in England and spread to much of Europe and North America. It involved the invention of machines that replaced human and animal labor in manufacturing and transporting goods. Central to this change was the invention of the steam engine, which could convert heat energy into the energy of motion. The source of energy for steam engines was either wood or coal; wood was quickly replaced by coal in most cases. Nations without a source of coal, or those possessing coal reserves that were not easily exploited, did not participate in the Industrial Revolution.

Prior to the Industrial Revolution, Europe and North America were predominately rural. Goods were manufactured on a small scale in the home. As machines and the coal to power them became increasingly available, the factory system of manufacturing products replaced the small home-based operation. Because expanding factories required a constantly increasing labor supply, people left the farms and congregated in areas surrounding the factories. Villages became towns, and towns became cities. Widespread use of coal in cities resulted in increased air pollution. In spite of these changes, the Industrial Revolution was viewed as progress. Energy consumption increased, economies grew, and people prospered. Within a span of two hundred years, the daily per capita energy consumption of industrialized nations increased eightfold. This energy was furnished primarily by coal, but a new source of energy was about to be discovered: oil.

The Chinese used some gas and oil as early as 1000 B.C., yet these resources remained virtually untapped until fairly recently. The oil well that Edwin L. Drake, an early oil prospector, drilled in Pennsylvania in 1859 was not the world's first oil well, but it was the beginning of the modern petroleum era. By 1870, oil production in the United States had reached over four million barrels a year and supplied 1 percent of the nation's energy requirements. It grew to nearly 50 percent by 1970 and currently contributes just over 40 percent. (See figure 2)

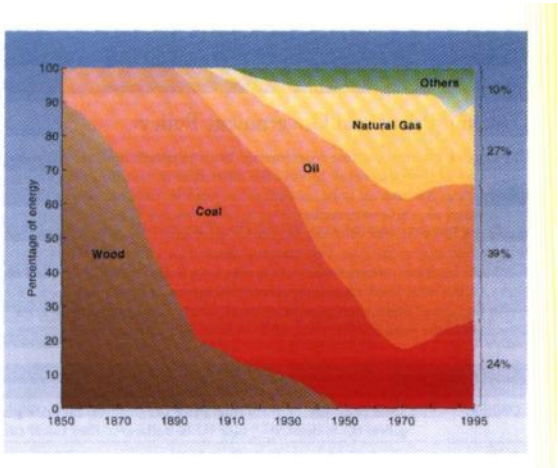


Figure 2
Oil Replaces Coal Just as wood was replaced by coal, coal was later replaced by oil. This graph represents the production of energy by various sources in the United States. Oil has remained a dominant energy source for the past 40 years, coal has decreased slightly, natural gas has increased, and other sources such as nuclear, hydroelectric, wind, and solar power have been increasing.

For the first 60 years of production, the principal use of oil was to make kerosene, a fuel for lamps. The gasoline produced was discarded as a waste product. During this time, the supply of oil exceeded the demand. However, the automobile dramatically increased the demand. In 1900, the United States had only 8,000 automobiles. By 1920, it had 8 million cars, and by 1992, 150 million. More oil was needed to make automobile fuel and lubricants.

The use of natural gas did not increase as rapidly as the use of oil. It primarily was used for home heating. In the early 1900s, 90 percent of the natural gas was "flared," that is, burned as a waste product at oil wells.

A series of events involving the U.S. government and the need for more oil was ultimately responsible for increased use of natural gas in the United States. World War II greatly increased the energy demand for manufacturing and transportation. In 1943, a federally financed pipeline was constructed to transport oil within the United States. This 2,000-kilometer pipeline transported oil more efficiently from wells in Texas, Louisiana, and Oklahoma to refineries and factories in the eastern section of the country. In 1944, a longer (2,400 kilometers) federally financed pipeline was built to increase the flow of oil to the country's eastern and midwestern regions.

After the war, the federal government sold these pipelines to private corporations. The corporations converted the pipelines to transport natural gas. Thus, a direct link was established between the natural gas fields in the Southwest and the markets in the Midwest and East. By 1971, there were 400,000 kilometers of long-range transmission to pipelines and 986,000 kilometers of distribution pipelines in the United States. Approximately 1,613,000 kilometers of natural gas distribution pipelines are used today. Natural gas is used in many parts of the developed world both for home heating and for industrial purposes.

VI. Comprehension check

Activity 1. Do the false/true activity

1.Fossil fuels are today's plants, animals and microorganisms.
2.The first fossil fuels were microorganisms.
3.The Industrial Revolution took place in the USA and then spread to England.
4.The source of energy for steam engine was coal.
5.The main use of oil was to make kerosene, a fuel for lamps.
6The Chinese started to use gas and oil 1000 A.C.
7.In 1900 there were only 8000 automobiles in the United States.
8.Before the Industrial Revolution Europe and America were almost urban.
9.Widespread use of coal in cities resulted in decreased population.
10.After the Second World War the American government sold almost all pipelines to private owners.

Activity 2. Look through text 9A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1.Edwin L. Drake drilled one of the _____.
2.Edwin L. Drake was _____.
3._____ the principal use of oil was to make kerosene, a fuel for lamps.
4._____ on a small scale in the home.
5.Energy consumption increased, economies grew and _____.
6.Natural gas is used both for _____.
7._____ to make automobile fuels and lubricants.
8.The first fossil fuel _____.
9.2000-kilometer pipeline transported _____.
10.The Industrial Revolution was viewed _____.

VII. Discussion
Activity 1. Define the logical parts of text 9A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 9A.
Activity 3. Translate in writing and reproduce.

- Привіт, рада тебе бачити.
- Привіт, я також рада, не бачила тебе цілу вічність (I haven't seen you for ages)
- Де ти була? Звідки йдеш?
- Я була на лекції.
- На якій лекції?
- На лекції професора Бузко про історію палива.

***

- Що ти читаєш?
- Я читаю розділ підручника про види палива.
- А про що зокрема?

- Про викопне паливо. Я прочитала, що викопне паливо – це залишки рослин, тварин та мікроорганізмів.
- А коли вони жили?
- Вони жили мільйони років тому.

***

- Ти виглядаєш щасливим. Що трапилось?
- Я успішно склала залік з історії екології.
- А на які запитання ти відповідала?
- Мені запропонували запитання про промислову революцію.
- А де вона відбулася?
- Промислова революція відбулася в Англії, а потім розповсюдилася на Європу та Північну Америку.
- Зрозуміло. Поздоровляю тебе з успішним складанням заліку.

***

- Що Вам розповіли на лекції з історії використання газу та нафти?
- Нам розповіли, що нафта і газ використовувались китайцями ще в 1000 р. до н.е.
- А як щодо Європи і США?
- Одна з перших нафтових свердловин була пробурена Едвіном Л. Дрейком.
- А хто він?
- Едвін Л. Дрейк - один з перших шукачів нафти. І одна з перших свердловин було пробурена ним у Пенсільванії в 1859.
- І це було початком сучасної нафтової ери, чи не так?
- Так, саме так.

VIII. Skim text 9B and get ready to speak about the history of Energy consumption.

Text 9B.

History of Energy Consumption

Every form of life and all societies require a constant input of energy. If the flow of energy through organisms or societies ceases, they stop functioning and begin to disintegrate. Some organisms and societies are more energy efficient than others. In general, history shows that complex industrial societies use the most energy. If societies are to survive, they must continue to expend energy. However, they may need to change their pattern of energy consumption as traditional sources become limited.

Biological Energy Sources

Energy is essential to maintain life. In every ecosystem, the sun provides that energy. The first transfer of energy occurs during photosynthesis, when plants convert light energy into chemical energy in the production of food. Herbivorous animals utilize the food energy in the plants. The herbivores, in turn, are a source of energy for carnivores. Because nearly all of their energy requirements were supplied by food, primitive humans were no different from other animals in their ecosystems. In such hunter-gatherer cultures, nearly all human energy needs were met by using plants and animals as food, tools, and fuel. (See figure 3)

Early in human history, people began to use additional sources of energy to make their lives more comfortable. They domesticated plants and animals to provide a more dependable supply of food. They no longer needed to depend solely upon gathering wild plants and hunting wild animals for sustenance. Domesticated animals also furnished a source of energy for transportation, farming, and other tasks. (See figure 4.*)* Wood provided a source of fuel for heating and cooking. Eventually this biomass energy was used in simple technologies, such as shaping tools and extracting metals.

Figure 3
Hunter-Gatherer Society. In this type of society, people obtain nearly all of their energy from the collection of wild plants and the hunting of animals. These societies do not make large demands on fossil fuels.

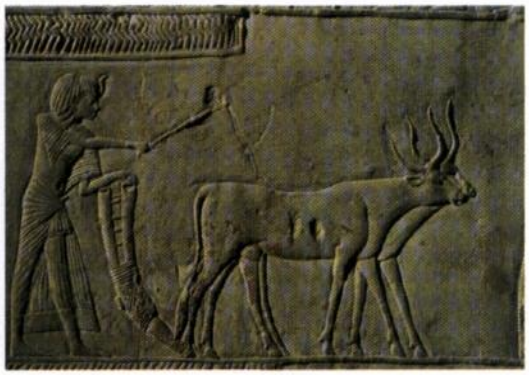


Figure 4
Animal Power. This bas-relief panel from an Egyptian tomb depicts an important accomplishment in the development of human civilization. With the use of domesticated animals, people had a source of power other than their own muscles.

Increased Use of Wood

Early civilizations, such as the Aztecs, Greeks, Egyptians, Romans, and Chinese, were culturally advanced, but their societies used human muscle, animal muscle, and fire as sources of energy. Except for limited use of some wind-powered and water-powered devices such as ships and canoes, the controlled use of fire was the first use of energy in a form other than food. Wood was the primary fuel. (Wood was also used for building materials and other cultural uses.) The energy provided by wood enabled people to cook their food, heat their dwellings, and develop a primitive form of metallurgy. Such advances separated humans from other animals. When dense populations of humans made heavy use of wood for fuel and building materials, they eventually used up the readily available sources and had to import wood or seek alternative forms of fuel.

Because of a long history of high population density, India and some other parts of the world experienced a wood shortage hundreds of years before Europe and North America did. In many of these areas, animal dung replaced wood as a fuel source. It is still used today in some parts of the world.

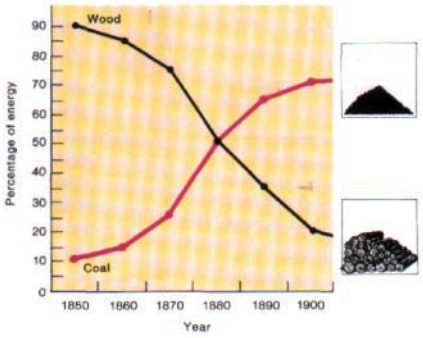


Figure 5
Coal Replaces Wood. In 1850, wood furnished *90* percent of U.S. energy, and coal most of the remaining 10 percent. Fifty years later, wood supplied only 20 percent of the energy and coal supplied 70 percent. The remainder was furnished by oil and natural gas.

Western Europe and North America were able to use wood as a fuel for a longer period of time. The forests of Europe supplied sufficient fuel until the thirteenth century. In North America, vast expanses of virgin forests supplied adequate fuel until the late nineteenth century. Fortunately, when local supplies of wood declined in Europe and North America, coal, formed from fossilized plant remains, was available as an alternative energy source. (See figure 5*)*

Summary writing.
Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1.India experienced a wood shortage many hundreds years before Europe and North America.

1. Aztecs, Greeks, Romans were culturally advanced civilizations.
2. Wood provided a source of fuel for heating.
3. If societies are to survive they must expand energy.
4. Dense populations of humans made heavy use of wood for fuel.
5. In North America virgin forests supplied fuel till the end of the 19th century.
6. Early in human history people began to use additional sources of energy for life.
7. Every form of life requires a constant input of energy.
8. Biomass energy was used in simple technologies.
9. In hunter-gatherer cultures all human energy needs we met by using plants and animals as food, tools and fuels.

Activity 2. Translate into English using the dictionary.

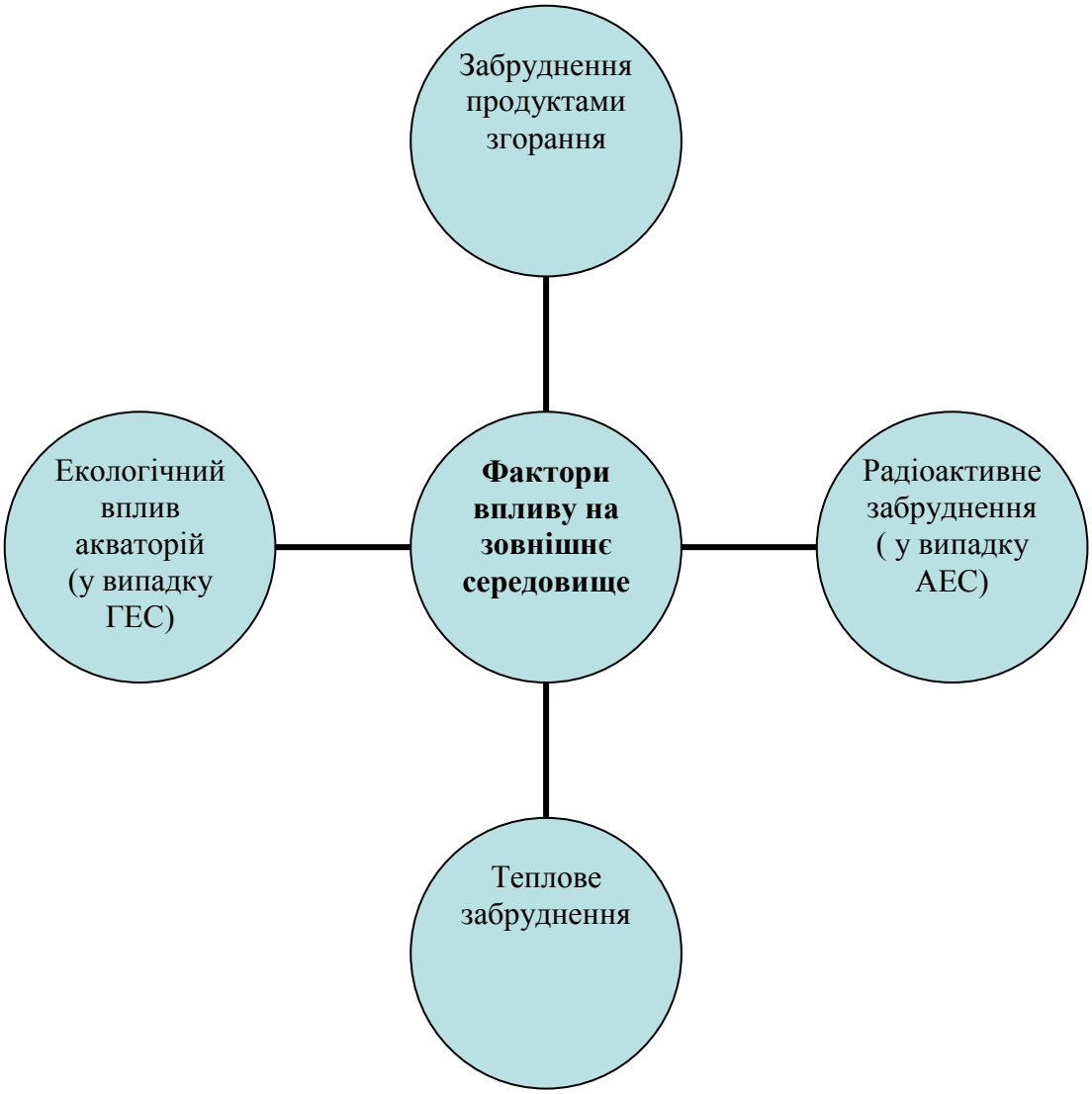
Енергетика – основний рушійний фактор розвитку усіх галузей промисловості , транспорту, комунального і сільського господарства, основа

підвищення продуктивності праці і добробуту людей. В енергетичному секторі найвищі темпи розвитку і масштаби виробництва. Доля участі енергетичних підприємств у забрудненні навколишнього середовища продуктами згорання органічних видів палива , які містять у собі шкідливі домішки, а також відходами низько потенційного тепла, доволі велика.

Інтенсивний розвиток електроніки та радіотехніки викликав забруднення природного середовища електромагнітними випромінюваннями (полями). Головними їхніми джерелами є радіо-, телевізійні і радіолокаційні станції, високовольтні лінії електропередач, електротранспорт. Поблизу кожного обласного центру , багатьох районних центрів ,великих міст розташовані телевізійні центри або ретранслятори, радіоцентри, засоби радіозв'язку різного призначення.

Рівень електромагнітних випромінювань у таких районах часто перевищує допустимі гігієнічні норми і дуже шкодить здоров'ю людей, що мешкають поруч.

Activity 3. Study the table. Translate it into English. Get ready to speak about the main factors of power industry polluting the environment.



IX. Long-term project work.
Prepare projects on the following topics.

1.Additional sources of energy to have made the life of our ancestors comfortable and decent.

2.Widespread use of coal in cities resulted in increased air pollution. Why?

3.The Industrial Revolution and its influence on the whole world.

X. Spoken English (Every day English)

1. Remember!

Як запросити до себе в гості, в кіно, в театр? Як прийняти запрошення та як його відхилити? Чи можна іноді обманювати?

Теж мені проблеми, скажите ви. Сказав **Yes** – прийняв запрошення, сказав **No** – відмовився від нього. Чи так це?

Давайте уявимо собі чотири ситуації: вас запрошують і ви

1.) з радістю приймаєте запрошення
2.) сумніваєтесь, прийняти його чи відмовитися
3.) ввічливо відмовляєтесь
4.) різко відмовляєтесь

2. Speech patterns.

Invitation (Will you come?)

To invite. Care to have. Another time, may be. That's perfect. I'd love to. With pleasure. I don't think so. What's the occasion? Occasion calls for celebration.

Let's go for a walk.	Давай підемо на прогулянку.
Let's play football on Sunday.	Давай пограємо у футбол у суботу.
Let's go to the country for the weekend.	Давай поїдемо за місто на вихідні.
Let's invite her to the housewarming party.	Давай запросимо її на святкування новосілля.
I would like to invite you to dinner.	Я хотів би запросити вас на обід.
I would like to go to the disco dancing with you.	Я б хотів піти на дискотеку з тобою.
Would you like to go to the theatre tonight?	Не хотів (ла) би ти піти до театру сьогодні ввечері?
Would you care to have a party one of these days?	Як ти дивишся на те, щоб провести вечірку найближчим часом?
What about a game of tennis next week?	Пограємо у теніс наступного тижня?
How about going to the restaurant today?	Чи не піти нам у ресторан сьогодні?
Shall we go out in the evening?	Давай погуляємо ввечері.
What about having a cup of coffee?	Як щодо філіжанки кави?
What about coming in for a cold drink?	Давай зайдемо вип'ємо чого-небудь холодного.
Would you mind having dinner with me?	Ти не проти пообідати зі мною?
How do you feel about going to the Art Gallery?	Може, підемо до художньої галереї?
I am sorry, but I can't.	Вибачте, але я не можу.
I wish I could, but …	Я б хотів, але, на жаль …
I don't think so...	Я так не вважаю.

I have to say “no”.	Повинен відмовитися.
I hate saying ”no”, but …	Я ненавиджу відмовляти, але …
I really don’t care...	У мене дійсно немає бажання.
I’m busy.	Я зайнятий.
Maybe another time.	Може, іншим часом.
I’m not sure.	Я не впевнений.
I can’t. I am awfully sorry. I am busy.	Я не можу. Мені дуже шкода. Я зайнятий.
I’ve got another invitation already.	У мене вже призначена інша зустріч.
Maybe a little later.	Може, наступного разу.
With great pleasure!	З задоволенням!
I’d love to!	З задоволенням.
That’s fine!	Прекрасно!
It’s a good idea.	Гарна думка.
Why not!	Чому б і ні.
It sounds attractive (great).	Звучить привабливо (чудово).
That would be wonderful!	Це було б чудово!
That’s perfect!	Пречудово!
I’ll be looking forward to it.	Я буду з нетерпінням чекати.

3. Dialogues and jokes to be remembered

***

- I would like to invite you to dinner at the new French restaurant.
- Thank you very much. That would be wonderful!

***

- Sally, would you care to go to the movies tonight?
- Thanks, Nick, but I’m not sure. Could I let you know in half an hour?

***

- How about a game of tennis tomorrow, Paul?
- Thank you, Victor, I wish I could, but I’m busy tomorrow. Maybe another time…

***

- Hi, Lora, let’s go out tonight?
- No, John, I really don’t care to go out with you.

***

- Hi, Pat. Are you busy?
- Not much really.Why?
- That’s good. Would you like to go to the Art Gallery? There’s a new exhibitiion there.
- I’d like that very much. How about Saturday afternoon?
- That’s perfect! I’ll be looking forward to it.

***

- Morning, Alex! You look tired.
- I am, actually. I was helping my friend to move to a new apartment.
- What about coming in for a cold drink?
- I can't, Robert. I've got to get home before late. Another time maybe.
- Sure, see you later!

***

- Hello, Kate. I'm glad I ran into you. My parents are visiting me for a few days and I'm giving a small party this Friday. I want them to meet some of my friends. Can you and Alex come?
- That sounds great, but I need to check with Alex first and see what his plans are. What time does it start?
- About 7.30.
- If we come, we may be a little late, okey?
- Sure. No problem.

***

- I would like to invite you to the theatre.
- Thanks, but I would prefer movies. Last performance was so bad, that people were lining up to get out of the theatre.

***

- Would you mind having dinner with me?
- Sure. That would be fun. Where?
- Turkish restaurant.
- Oh, no, never. The food there is absolute poison and such small portions!

***

- How do you feel about going to the opera?
- Well, it's a good idea.
- What did you hear in the opera last night?
- All sort of news: Manya got married, the Ivanovs got divorsed…

10.Translate in writing

***

- Іра, як що до того, щоб піти в кіно сьогодні ввечері?
- Мені так не хочеться говорити „ні", але я дуже втомилась. Я допомагала своїй подрузі в переїзді на нову квартиру.
- Може, тоді зайдемо у кафе або прогуляємось?
- Вибач мені ще раз, але я не впевнена. Може, іншим разом?
- Добре. Нічого не поробиш. Завтра день народження Кирила. Підеш зі мною?
- Дякую за запрошення, Віктор, але завтра у мене подія.
- А як щодо післязавтра?
- Добре, зателефонуй мені, і ми домовимось. А зараз вибач, якщо я не поспішу, я запізнюся на обід. Батьки чекають на мене.

- Передавай мої вітання батькам.
- Дякую, передам.

***

- Давай поїдемо за місто на вихідні.
- Спасибі за запрошення, але я зайнята в суботу і неділю. Приїхали мої батьки.
- А через тиждень? Погода обіцяє бути прекрасною. Покатаємося на лижах, підемо в ресторан.
- Добре, зателефонуй мені, і ми домовимося. А зараз вибач. Якщо я не поспішатиму, то спізнюся на вечерю. На мене чекають батьки.
- Передай їм привіт.
- Спасибі, передам.

***

- Добрий вечір, пан Мітчел. Як поживаєте?
- Спасибі, добре. А Ви?
- Теж добре. Ви зайняті в суботу?
- Ні. А що?
- Приходьте до нас обідати. Ми будемо дуже раді.
- Спасибі за запрошення. Але з якої нагоди? (What's the occasion?)
- День народження моєї дружини.
- Це треба відзначити. (The occasion calls for celebration). Прийду з задоволенням.
- Спасибі. До побачення. Чекаємо на Вас у неділю о 5 вечора.

***

- Привіт, Люсі. Я рада, що зустріла тебе. Я влаштовую (I am giving) невелику вечірку цієї п'ятниці. Я хотіла б познайомити тебе зі своїми друзями. Ти зможеш прийти з Пітером?
- Звучить привабливо, але мені потрібно спочатку запитати Пітера про його плани (to check with Peter at first). О котрій початок?
- Десь о 8.30.
- Якщо ми прийдемо, то, можливо, трішки спізнимося, добре?
- Звичайно. Ніяких проблем.

5. Situation for spontaneous projects.

1. You are going to invite a famous British fighter against using nuclear energy to the conference to be held at your university in 3 month. You should make him accept the invitation. At last he agrees.
2. You never go out with a stranger. But he wants you to go for a walk with him, but you don’t want to give up your principles.
3. You are having a free evening. Call your friend up and invite him to visit you and to get acquainted with your parents. At first he agrees but when he finds

out that your parents are in he does everything possible to refuse. Try to come to an agreement.

TEST/REVIEW

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. The amount of energy required by the country industrial sector … on the types of industrial processes.

A) will depends	C) were depended
B) depends	D) are depended

2. The sulfur dioxide … already … greatly to acid formation.

A) contribute	C) are contributing
B) has contributed	D) contributed

3. The effects of acid rain on aquatic ecosystems … investigated before the end of the century.

A) has not been	C) had not been
B) have not been	D) will be

4. Kerosene … mainly a fuel for lamps.

A) was considered	C) will be considered
B) is considered	D) was being considered

5. He said he … be glad to get acquainted with Mr. Brown.

A) will	C) would
B) will have	D) will being

Task II. Total 20

Give English or Ukrainian equivalents of the following.

1. Бути середнім на зріст
2. Виглядати
3. Зі мною не можна зв’язатися по телефону
4. Він зараз розмовляє по телефону
5. Лінія перевантажена
6. Скажіть йому пере телефонувати мені
7. Energy consumption
8. High elevation
9. Air-pollution sources
10. Пошуки нафти
11. Бути запальним
12. Бути неосвіченим

13. High tax
14. Неефективні процеси
15. Електропоглинаючий метод
16. Kinds of organisms
17. Long-term study
18. to cause direct damage
19. високо-розвинуті країни
20. країни, що розвиваються

Task III. Total 10
Use the correct verb form to open the brackets.

1. If they (shut down) the electric power station, a lot of neighboring settlers (to love) their jobs.
2. Water in the Middle East (to be) a highly sensitive issue.
3. An ancient man (to need) something (to carry) and (to keep) water in.
4. The Chinese (to use) some gas and oil as early as 1000 B.C.
5. The most energy (to use) by complex industrial enterprises.

Task IV. Total 10
Compose questions with the question words in brackets.

1. Some countries are facing a population crisis. (General)
2. The amount of energy for commercial use will increase every year. (When?)
3. Private automobiles in the USA consume 15 percent of the oil production. (Disjunctive)
4. Natural gas is used in many parts of the developed world. (Where?)
5. Oil and gas are widely used in chemical industry in production of synthetic materials. (What … for …?)

Task V. Total 10
Insert prepositions where it is necessary.

1. Mr. Smirnoff is … dinner now.
2. You are wanted … the phone.
3. Acid deposition is the accumulation … acid-forming particles.
4. He is quite hot-tempered, he takes … his father.
5. She is very pretty, a real picture … a girl.

Task VI. Total 10
Translate into English.

1. Сірчана кислота – основний компонент кислотних дощів.
2. Подивіться, що мені дали.
3. Мене запросили до театру на прем’єру.

4. Останнім часом кислотні дощі завдають великої шкоди зеленим насадженням.
5. Вода здається чистою, оскільки в ній відсутні майже всі мікроорганізми.

Task VII. Total 10
Compose sentences with the following words and translate them.

1. Urban, were, revolution, Europe, and, before, the, America, most, industrial.
2. For, a, demand, more, families, two-car, created, energy, automobiles.
3. Less, do, mean, not, jobs, in, industry, automobile, the, cars, more.
4. Snow, precipitation, or, rain, for, is, a, acid, sleet, term, and, other, wet.
5. 14000, Canada, about, in, have, lakes, become, acidified.

Task VIII. Total 10
Give a smart translation:

In 1982, Canada suggested a mutual 50 percent reduction of sulfur dioxide by 1990. Citing a lack of research, the United States did not agree with the plan. This prompted the Environment Minister to state, "Always the constant refrain rings out from the administration that nothing is proven, and that an indefinite amount of further study is needed, not prompt action. Well, we can't wait. Our lakes and forests are literally dying."

In fact, the dispute reached such proportions that in 1983 the U.S. Department of Justice ruled that a Canadian-produced film on acid rain had to be labeled as political propaganda before it could be shown in the United States. The U.S. Department of Justice also required that the names of U.S. groups viewing the film be reported to the Justice Department. This attitude prompted the Canadian Minister of the Environment to observe, "It sounds like something you would expect from the Soviet Union, not the United States."

Task IX. Total 10
Give your opinion on the following (not less than 15 sentences):

Passengers are eager to pay for the rapid travel over long distances.

5.2.UNIT 10. HOW ENERGY IS USED

Nuclear power has provided a significant amount of electricity for the people of the World. Over 7% of the energy consumed worldwide comes from nuclear power.

Nuclear Energy: Benefits and Risks

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. abundant (n) – багатий, рясний
2. afford (v) – дозволяти, допускати
3. alter (v) – змінювати, міняти
4. amount (n) – кількість, сума
5. component (n) – компонент, складова частина
6. convenience (n) – зручність, комфорт
7. dedicate (v) – присвячувати, призначати
8. determine (v) – визначати, встановлювати
9. divert (v) – відводити, відхиляти, відволікати
10. encourage (v) – схвалювати, заохочувати
11. equal (adj) – рівний, однаковий, рівносильний
12. furnace (n) – піч, топка
13. hearth (n) – камін, топка
14. instead of (adv) – замість
15. luxury (n) – розкіш
16. populace (n) – простий народ, маси
17. preclude (v) – запобігати, усувати, заважати
18. process (n) – захід, спосіб, технологічний процес
    process (v) – обробляти
19. purpose (n) – ціль, намір
20. reduce (v) – зменшувати, скорочувати
21. require (v) – вимагати, потребувати, мати потребу
22. scarcity (n) – нестача, брак, дефіцит
23. stove (n) – піч
24. upgrade (v) – підвищувати, підіймати
25. wealth (n) – багатство

II. Vocabulary check.

Activity 1. Give Ukrainian equivalents of the following.

1. residential purpose
2. gross domestic product
3. residential and commercial energy
4. fuel-efficient stove
5. energy-efficient process
6. metric ton
7. energy-expensive (cheap) method
8. high taxes

9. abundant energy
10.electric hearth method
11.commercial use

Activity 2. Match the following words with their explanations.

to determine	to use up
density	outlying residential district of a town or city
consumer	instrument or apparatus
residential	small, no serious of important
to consume	to find out precisely
slight	the quality of being dense
to hasten	make cool or cold, keep in good condition by keeping in cold
suburb	of, with private houses
appliance	a person who uses goods
to refrigerate	to move or act with speed, to cause to be done quickly

III. Grammar review

Future Tenses. Future Simple. Future Continuous

Є декілька способів передачі майбутнього часу. Сюди входять:

Present progressive:	I'm seeing him tomorrow.
Going to:	We're going to discuss the news.
Present simple:	His plane gets to Heathrow at 12.45.
Will:	It will probably arrive late owing to bad weather.
Future perfect simple:	I'll have arranged his hotel accommodation by then.
Future continuous (progressive):	He'll be staying at the Kharkiv Hotel.
Be + infinitive:	You are to tell nobody of our discussions.

Вживання

1. При розмові про плани або домовленості.
I'm meeting Mr. Brown next week. *He's arriving* on Tuesday.

2. При розмові про наміри.
У цьому випадку скоріше використовується *going to* , ніж *will*
She *is going to* leave in a month's time.
When *are you going* to visit us next?

3. При обіцянках чи пропозиціях.
"Could you lend me $50? *I'll pay* you back tomorrow".

I don't know if I can finish the job by Friday but *I'll do* my best.

4. У розкладі руху поїздів , літаків, тощо.

Для вираження майбутньої дії тут використовуємо Present Simple, тому що навряд чи ці події скоро зміняться.

The train *leaves* from Waterloo at 17.00.

Our next planning meeting *is* on Wednesday.

5. Події, які будуть завершені до настання майбутнього часу

У цьому випадку вживається the Future Perfect Simple:

By the time they arrive we *will have gone* home.

6. Для ввічливого звертання

Will you *be staying* for dinner? (питання відносно планів)

Will you *stay* for dinner? (прохання).

7.the present simple після *if, when, until, as soon as*

If you *give* us a discount we'll place a big order.

Switch off the lights when you *leave.*

Exercise 1.

You may not agree with these predictions but you can choose the right verb form anyway!

1. By 2020 the first men …… (land) on the planet Mars.
2. In the next 100 years, the Netherlands …… (disappear) under water.
3. In the second decade of the 21st century people ……… (eat) more genetically modified food.
4. By 2030 Chinese …… (become) the language of international scientific communication.
5. Many people …… (live) to over 100 years as medical science advances.

Exercise 2.

Complete these sentences using appropriate verb form using if, when, until, as soon as . (There may be more than **one** possible answer).

1. I …… (get) in touch when I …… (return) from the Middle East.
2. If they …… (shut down) the plant, a lot of people …… (lose) their jobs.
3. We …… (start) until everyone …… (be) here.
4. He can't make a decision until he …… (see) the president.
5. A project to create a bacterial cell from inanimate chemicals …… (go ahead) as soon as it …… (receive) approval from an ethics committee.

Exercise 3.

Fill in the correct future form:

Technology has made such dramatic advances in the past decade that by the year 2050 who knows what changes 1) *will have taken* (take) place. It is quite likely that by 2050 we 2)…… (use up) most of the earth's natural resources and so we 3)…..… (rely) on wind power and hydropower for our energy needs. As a result of this shortage of energy, it is quite probable that scientists 4)…….. (find) a way for

us to live outside the earth. By the next century it's possible that people 5)…… (live) in cities on the Moon or perhaps in cities on the seabed. It is to be hoped that scientists 6)……(discover) cures for fatal diseases such as AIDS and, due to the advancement of genetic engineering, hereditary diseases passed down from generation to generation 7)…… (exist) no longer. It is quite possible that by 2050 life expectancy 8)…… (increase) to 100 and that we 9)…… (be able to) enjoy a healthier existence than now is possible. Another area likely to have been further affected by technology in the year 2050 is education. In schools, computers 10)…… (replace) teachers and many students 11)…… (stay) at home to complete their education. We 12)……(see) changes in the work-place ,too. The two main areas of employment 13)…… (be) the so-called creative and caring professions, and the disappearance of jobs in manufacturing 14)…… (result) in massive unemployment.

Exercise 4.

Fill in the correct present or future forms:

When you 1) …… (take) a holiday with our company, you 2) …… (have) the time of your life. As soon as you 3) …… (arrive), you 4) …… (feel) as if you 5) …… (be) in a different world. While you 6) …… (stay) with us, we 7)…… (do) our best to ensure that your holiday 8) …… (run) smoothly and you 9) …… (not/get) bored. Our company 10) …… (have) something to offer for all ages and tastes. If you 11) …… (want) to play golf, ride, sail or fish, our staff 12) …… (be) happy to make the necessary arrangements, or if you simply 13) …… (want) to relax and enjoy the breathtaking scenery we 14)…… (be) delighted to organise some guided walks. Before your holiday 15)…… (be) over, you 16) …..…… (already/plan) your next visit.

Exercise 5.

Translate into English:

1. Спеціалісти стверджують, що використання вугілля у промисловості буде зростати.
2. Питання енергетичної кризи часто ставиться науковцями.
3. Якщо людство не перестане забруднювати навколишнє середовище, через декілька років нам нічим буде дихати.
4. Згідно з песимістичними прогнозами, потепління клімату матиме величезний вплив на життя людей у майбутньому.
5. Будівельний майданчик для атомної станції буде знаходитись на відстані 35 км від міста , він буде добре провітрюватись і не буде затоплюватись під час повені.
6. Якщо вітер перестане, піде дощ.
7. Вони побудують новий міст через річку, якщо знайдуть гроші.
8. Увага до невеликих ГЕС буде зростати, тому що потужностей великих станцій недостатньо для забезпечення усіх енергетичних потреб країни.

9. До початку нового навчального року ми будемо змушені закінчити написання звіту.
10. Прогноз погоди на завтра стверджує, що о 3 годині буде йти дощ, часом зі снігом.

IV Pre-text discussion

Activity 1. Do you know that:

- The highly industrialized countries use most of the world's energy.
- The Canadians and the Americans use about twice as much energy as the French and the Japanese.
- Developed countries use energy for three purposes: residential and commercial, industrial and transportation ones.
- In Canada 40 percent of residential energy is used for heating.
- India uses outdated open-hearth furnaces to produce steel.
- In countries with high population density rail and bus transport is particularly efficient.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following.

1. The amount of energy required for residential and commercial use varies greatly throughout the world.
2. Passengers are eager to pay for the rapid travel over long distances.
3. Private automobiles in the USA consume 15 percent of the world's oil production.

V. Read, translate text 10A.

Text 10A.

"How energy is used"

The amount of energy consumed by countries of the world varies widely.

Energy Consumption 1995

Region	**Energy consumption per capita per year (in tones of oil equivalent)**
Africa	0.33
Latin America	0.67
Japan	3.72
France	4.05
Germany	4.11

Canada	7.61
United States	7.86

The highly industrialized countries use most of the world's energy; less-developed countries use much less. Even countries with the same level of development vary in the amount of energy they use as well as how they use it. To maintain their style of living, individuals in Canada and the United States use about twice as much energy as people in France or Japan and about 25 times as much energy as people in Africa.

Countries also use energy in different ways. Industrialized nations use energy about equally for three purposes: (1) residential and commercial uses, (2) industrial uses, and (3) transportation. Less-developed nations with little industry use most of their energy for residential purposes (cooking and heating). Developing countries use much of their energy to develop their industrial base.

Residential and Commercial Energy Use

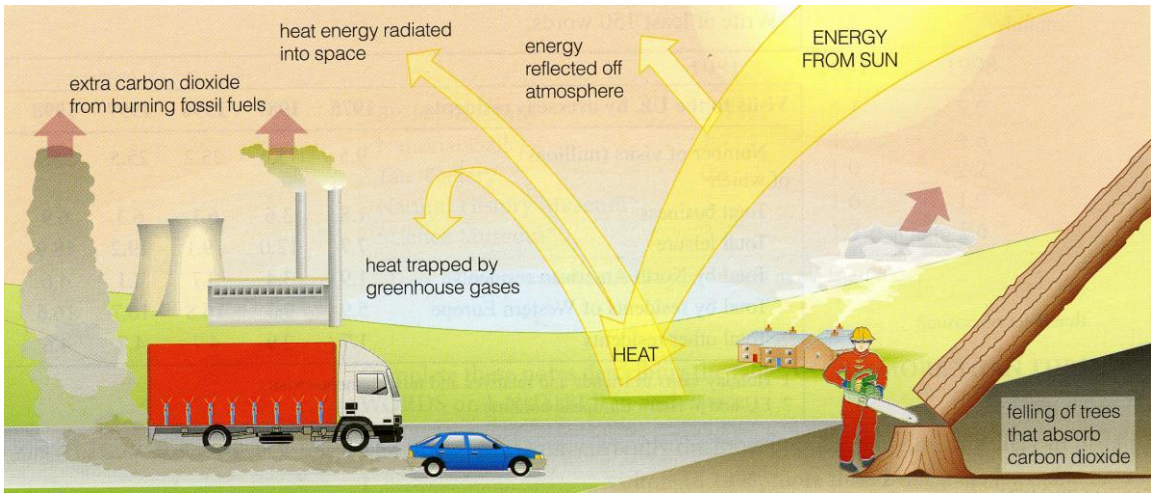
The amount of energy required for residential and commercial use varies greatly throughout the world. Although a country with a high gross domestic product (GDP) uses a large amount of energy, it uses a lower percentage of its energy per capita for residential and commercial needs than does a less-developed country. For example, about 30 percent of the energy used in North America is for residential and commercial purposes, while in India, 90 percent of the energy is for residential uses. The ways residential and commercial energy is used also vary widely. In North America, 75 percent is used for air conditioning, refrigeration, water heating, and space heating. In India, almost all of the energy is used in the home for cooking since the scarcity and high cost of fuel precludes other uses. The current pattern of residential and commercial energy use in each region of the world determines what conservation methods will be effective. In Canada, which has a cold climate, 40 percent of the residential energy is used for heating. Proper conservation practices could reduce this by 50 percent. In Africa, almost half of the energy used in the home is for cooking.

Open Fire Cooking. About half of the energy demand in Africa is for cooking. Using a stove instead of an open fire could reduce this energy need by nearly 50 percent.

Using fuel efficient stoves instead of open fires could reduce these energy requirements by 50 percent.

Industrial Energy Use

The amount of energy countries use for industrial processes varies considerably. Non-industrial countries use little energy for industry. Countries that are developing new industries dedicate a high percentage of their energy use to them. They divert energy to the developing industries at the expense of other sectors of their economy. Highly industrialized countries use a significant amount of their energy in industry, but their energy use is high in other sectors as well. In the United States, industry claims about 30 percent of the energy used.



The carbon cycle

The amount of energy required in a country's industrial sector depends on the types of industrial processes used. Many countries use inefficient processes and could reduce their energy consumption by converting to more energy-efficient ones. However, they need capital investment to upgrade their industries and reduce energy consumption. Some countries cannot afford the upgrade. For example, India, a nation with few coal deposits, still uses outdated open-hearth furnaces to produce steel. These furnaces require nearly double the worldwide energy average to produce a metric ton of steel. The high cost of converting forces India to continue to use this energy-expensive method rather than convert to the more efficient electric-hearth method.

Transportation Energy Use

As with residential, commercial, and industrial uses, the amount of energy used for transportation varies widely throughout the world. In some of the less-developed nations, transportation uses are very small. Per capita energy use for

transportation is larger in developing countries, and highest in highly developed ones.

Per Capita Energy Use for Transportation, 1989	
Country	**Energy use in gigajoules/capita**
India	2
Zimbabwe	4
Mexico	17
Argentina	18
Japan	28
USSR	29
Netherlands	39
Denmark	42
Australia	82
United States	103

Once a country's state of development has been taken into account, the mix of bus, rail, water, and private automobiles is the main factor in determining a country's energy use for transportation. In Europe, Latin America, and many other parts of the world, rail and bus transport are widely used because they are more efficient than private automobile travel, governments support these transportation methods, or a large part of the populace is unable to afford an automobile. In countries with high population densities, rail and bus transport is particularly efficient.

Public Transportation. In regions of the world where energy is expensive, people make maximum use of cheaper public transportation.

In these countries, automobiles require about four times more energy per passenger kilometer than bus or rail transport does. In addition, most of these

countries have high taxes on fuel, which raises the cost to the consumer and encourage the use of public transport. In North America, the situation is different. Government policy has kept the cost of energy low and supported the automobile industry while removing support for bus and rail transport. Consequently, the automobile plays a dominant role, and public transport is primarily used only in metropolitan areas. Rail and bus transport are about twice as energy efficient as private automobiles. Private automobiles in North America consume over 15 percent of the world's oil production, while the rest of the automobiles in the world, consume 7 percent. Air travel is relatively expensive in terms of energy, although it is slightly more efficient than private automobiles. Passengers, however, are paying for the convenience of rapid travel over long distances.

VI. Comprehension check
Activity 1. Do the false/true activity

1. Both the highly industrial and less-developed countries use the same quantity of energy.
2. Countries use energy in different ways.
3. Less-developed nations use most of their energy for cooking and heating.
4. Countries with high population density require more energy for automobiles than for rail or bus transport.
5. The ways residential and commercial energy is used don't vary widely.
6. Countries that are developing new industries dedicate a high percentage of their energy use to them.
7. In Africa almost half of the energy is used in homes for heating.
8. In Latin America rail and bus transport is more efficient than private automobile transport.
9. Today we face not only a resource crisis, but a population crisis too.
10. Public transport is mainly used in rural communities.

Activity 2. Look through text 10 A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Per capita energy use for transportation _____.
2. _____ are very small.
3. India uses _____.
4. Fuel efficient stoves could reduce _____.
5. In Africa, almost half of the energy used in the home _____.
6. Countries with a high gross domestic product use _____.
7. People in Canada and in the United States use 25 times as _____.
8. Less-developed nations use much of their energy on _____.
9. Rail and bus transport are about twice as energy efficient _____.
10. Air travel is relatively more expensive than _____.

VII. Discussion
Activity 1. Define the logical parts of text 10A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 10A.
Activity 3. Translate in writing and reproduce.

- Привіт! Радий тебе бачити. Гарний день, чи не так ?
- Так, погода чудова, тепло, відчувається весна, але ...
- Що але?
- У мене скоро модульний тест.
- Ну то й що?
- Дуже складна тема.
- Яка тема?
- “Енергія і як вона використовується у всьому світі”. Тож мені треба прочитати багато додаткового матеріалу до лекцій „Про використання енергії для торгівлі та для споживача”.
- Зрозуміло! Бажаю тобі успішно написати модульний тест!

***

- Чи знаєш ти, що кількість енергії, що споживається різними країнами різна?
- Так, я згоден/а з цим. Мені здається, що високорозвинуті країни споживають більше енергії, ніж менш розвинуті у промисловому відношенні країни.
- Ти цілком правий.

***

- Що ти робиш?
- Я читаю статтю про використання енергії.
- І що дізнався з цієї статті, до речі, хто автор?
- Автор- відомий еколог Каніло, і він підкреслює в цій статті, що кількість енергії, що споживається для різних цілей різна.
- Що він має на увазі?
- Чи знаєш ти, що розвинуті країни використовують однакову кількість енергії для трьох цілей;а саме: а) в комерційних та побутових цілях; б) виробниче використання; в) для транспортного перевезення.
- А менш розвинені країни?
- Менш розвинені країни використовують більшу частину енергії для споживчих цілей (приготування їжі та опалення).
- А ті країни, які розвиваються?
- Ті країни, які розвиваються, використовують більшу частину енергії, щоб розвивати свою промислову базу.
- Зрозуміло!

Activity 4. Make up your own dialogues on the theme "How energy is used".

VIII. Skim text 10B and get ready to speak about the most important pressure and interest groups protecting the environment.

Text 10B.

"Automobile and energy"

The cheap, abundant energy that fueled industries produces an ever-increasing amount and array of consumer goods. One product was the automobile. The growth of the automobile industry, first in the United States and then in other industrialized countries, led to roadway construction, which required energy. Thus, the energy costs of driving a car were greater than just the fuel consumed in travel. As roads improved, higher speeds were possible. People demanded faster cars, and automobile companies were quick to build them. Bigger and faster cars required more fuel and ever better roads. So roads were continually being improved, and better cars were being produced. A cycle of more chasing more had begun. In North America and much of Europe, the convenience of the automobile encouraged two-car families, which created a demand for more energy. It requires energy to mine ore, process it into metals, from the metals into automobile components, and transport all the materials. As the economy grew, so did energy needs.

More cars meant more jobs in the automobile industry, the steel industry, the glass industry, and hundreds of other industries. Constructing thousands of kilometers of roads created additional jobs. From their beginnings as suppliers of lamp oil, the oil companies grew into one of the largest industries in the world. Thus, the automobile industry played a major role in the economic development of the industrialized world. All this wealth gave people more money for cars and other necessities of life. The car, originally a luxury, was now considered a necessity.

The car not only created new jobs but also altered people's lifestyles. Vacationer could travel greater distances. New resorts and chains of motels, restaurants, and other businesses developed to serve the motoring public, creating thousands of new jobs. Because people could live farther from work, they began to move to the suburbs.

Energy-Demanding Lifestyle. Building private homes on large individual lots some distance from shopping areas and places of employment is directly related to

the heavy use of the automobile as a mode of transportation. Heating and cooling a large enclosed shopping mall, along with the gasoline consumed in driving to the shopping center, increase the demand for energy.

Large shopping centers in suburban areas hastened the decline of central business districts. Today, fewer than 50 percent of retail sales are made in central business districts of North American cities, which has resulted in a loss of jobs in these areas. In Philadelphia, 79 percent of all retail jobs were located in the city in 1930; by 1970, they had declined to 43 percent.

As people moved to the suburbs, they also changed their buying habits. Labor-saving, energy-consuming devices became essential in the home. The vacuum cleaner, dishwasher, garbage disposal, and automatic garage door opener are only a few of the ways human power has been replaced with electrical power. Eleven percent of the electrical energy in North America is used to operate home appliances. Other aspects of our lifestyles illustrate our energy dependence. The small, horse-powered farm of yesterday has grown into the huge, diesel-powered farm of today. Regardless of where we live, we expect Central American bananas, Florida oranges, California lettuce, Texas beef, Hawaiian pineapples, Ontario fruit, and Nova Scotia lobsters to be readily available at all seasons. What we often fail to consider is the amount of energy required to process, refrigerate, and transport these items. The car, the modern home, the farm, and the variety of items on our grocery shelves are only a few indications of how our lifestyles are based on cheap, abundant energy.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. The car altered people's lifestyle.
2. The car, the modern home, the farm and so on are only a few indications of our lifestyles based on cheap, abundant energy.
3. The car, originally a luxury, is now considered a necessity.
4. Cheap, abundant energy fuels industries producing an array of consumer goods.
5. Two-car families automobiles created a demand for more energy.
6. As the economy grew, so did energy needs.
7. We often fail to consider the amount of energy required to process, refrigerate and transport different items.
8. More cars meant more jobs in the automobile industry.
9. Constructing thousand of kilometers of roads created additional jobs.
10. The automobile industry played a major role in the economic development of the industrialized world

Activity 2. Translate into English using the dictionary.

З розвитком науки та техніки невпинно зростає антропогенний вплив на геологічне середовище. До початку XVIII ст.. людина використовувала 26 елементів мінеральної сировини, на початку XX ст. – 59, а сьогодні – більше 80. Тому найбільш негативно впливають на геологічне середовище гірничодобувна і будівельна галузі промисловості. Лише 10% мінеральної сировини , що добувається з надр планети, перетворюється на готову продукцію, а решта 90% забруднює біосферу. Наприклад, при збагаченні мідних руд майже третина міді викидається у звалища. Крім цього, недостатньо використовуються супутні матеріали – срібло, цинк та інші компоненти руд.

Внаслідок видобування, збагачення та переробки корисних копалин, нагромадження порожньої породи та відходів виробництва відбувається концентрація шкідливих елементів – важких металів, радіонуклідів тощо, що призводить до важких захворювань і навіть масової загибелі рослин і тварин.

IX. Long-term project work.
Prepare projects on the following topics.

1. Dependence of the automobile on energy production.
2. Usage of energy for industrial purposes in Ukraine.
3. Energy and transportation in Ukraine and Europe.

X. Spoken English (Every day English)

1. Remember!

Кажуть, „зустрічають за вбранням, а проводжають за розумом". І неодмінно тут є доля правди. Але перше враження не завжди вірне. Які ж фрази треба використовувати для опису зовнішності людини, рис його характеру, як позитивних так і негативних, тощо?

Запам′ятайте такі фрази та не плутайте їх!

To look like	виглядати
What does he look like?	На кого він схожий?
To be like	риси характеру, освіта
What is he like?	Що він за людина?
To take after	Бути схожим на когось характером
Who does she take after?	В кого вона характером?

2. Speech patterns.

Appearance.

What do you think of Jane?	Що ти думаєш про Джейн?
What is Helen like?	Що за людина Олена?
Jane is honest and kind.	Джейн чесна та добра.
Helen is sincere.	Олена щира.
What does Nikita look like?	Як виглядає Микита?
He is tall, slim and dark-eyed.	Він високий, стрункий з чорними очима.
Who does your sister take after?	В кого пішла характером ваша сестра?
She takes after our farther.	В нашого батька.

To be honest	Бути чесним.
To be sincere	Бути щирим.
To be punctual	Бути пунктуальним.
To be careless	Бути недбалим
To be stubborn	Бути впертим
To be easy to deal with	Бути людиною, з якою легко мати справу
To be talented	Бути талановитим
To be educated	Бути освіченим
To be a reliable partner	Бути надійним партнером
To be on friendly terms	Бути у дружніх стосунках
To be reserved	Бути стриманим
To be polite	Бути ввічливим
To be professional	Бути професіоналом

To be of great intellect	Бути освіченою людиною
To be angry	Бути сердитим
To be greedy	Бути жадібним
To be cruel	Бути жорстоким, безжалісним
To be double-faced (two-faced)	Бути нещирим, двоєдушним
To be harmful (noxious)	Бути зловредним
To be hot-tempered	Бути запальним
To be a mean	Бути підлим
To be a lickspittle (toady, wheedler)	Бути підлизою
To be illiterate	Бути неосвіченим
To be ignorant	Бути невігласом
To be beautiful	Бути красивою
To be a picture of a girl	Бути красунею
To be handsome	Бути красивим
To be blond (brunette, brown, fair)	Бути блондинкою (брюнеткою, шатенкою, білявкою)
To be slim	Бути струнким
To be stout	Бути повним
To be tall	Бути високим
To be of middle height	Бути середнім на зріст
She is blue-eyed (black-eyed)	Вона блакитноока (чорноока)
My sister is long-legged	У моєї сестри довгі ноги
She is small-nosed (long-nosed)	У неї маленький ніс (довгий ніс)
To have an irresistible smile	Мати неперевершену усмішку
To be married	Бути заміжньою
To be engaged	Бути зарученим
To be divorced	Бути розлученим
To be single	Бути одинаком
To be a widow (widower)	Бути вдовою (вдівцем)

To look like. To be like. To take after. To think of. To keep fit. Well-read, well-educated. To be handsome. Irresistible smile. To rely on. By first marriage

3. Dialogues to be remember

***

- Have you seen our new English teacher?
- Not yet, why?
- She is young and pretty.
- Really?

- She is blond, tall, slim with an irresistible smile.
- Is she married?
- That's what I'd like to find out.

***

- Do you know Mr. Robertson?
- We've met at the conference in New York. He was reporting there.
- What is he?
- He is talented, well-educated, highly professional. He is easy to deal with.
- Really? And what does he look like?
- He is of middle height, neither slim nor stout. He is black-eyed, broad-shouldered.
- Does he wear a beard or a moustache?
- When we met he was wearing neither a beard nor a moustache.

***

- Excuse me. Are you married?
- No, I am divorced.
- Do you have children?
- Yes, I have a daughter by first marriage.
- Who does she take after?
- Both my former husband and me. She is as stubborn as my husband, but kind and honest as I am.
- Does she work or study?
- She graduated from the KhNU and teaches English at Kharkiv National Automobile and Highway University.
- Does she like her profession?
- "Like" is the wrong word, she adores it!

***

- Hi, glad to see you! How are you? I heard you were going to get married.
- You are quite right!
- What is your bride?
- She is a student. She is a future environmentalist.
- What does she look like?
- She is of middle height, slim, grey-eyed. Her hair is brown. She has a snub nose and a very good figure.
- When are you going to get married?
- In a week. Will you come to our wedding party?
- I will. By the way, what is her name?
- She is Victoria Dubrovina.
- Oh! Her name is familiar to me. If I am not mistaken we studied together at school.
- Really?
- I think so.

4. Translate in writing

***

- Бажаєте ви познайомитися з Кирилом Кравчуком?
- Ну, я нічого про нього не знаю. Як він виглядає?
- Він ані високий, ані низький, широкоплечий. У нього чорні очі, густі брови та довгі вії.
- Що він за людина?
- Він дуже стриманий, ввічливий, добрий та чесний.
- Скільки йому років?
- Я точно не знаю. (I don't know exactly) Гадаю, не більше тридцяти.
- Він одружений?
- Ні, і ніколи не був.
- Познайом мене з ним. Мені здається, що він цікава особистість (personality).
- До речі, а чим він займається?
- Він відомий еколог та вчений, незважаючи на те, що молодий.

***

- У вас новий начальник? Що ви можете сказати про нього?
- Я майже його не знаю, але можу сказати, що у нього гарні манери і він дуже кваліфікований керівник.
- Опишіть його зовнішність.
- Він маленький, повний, у нього кругле обличчя, світлі очі, прямий ніс, він лисий (bold).
- У вас була можливість з ним поговорити?
- Так, і я маю сказати, що з ним легко мати справу.
- Мені приємно це чути. Він мій старший брат. Вам буде легко з ним працювати, він – надійна людина.
- Будемо сподіватися.

***

- Цей молодий чоловік ваш син?
- Звідки ви знаєте?
- Він схожий на вас.
- Так, але він пішов у матір характером. Він дуже запальний.
- Скільки йому років?
- Йому 18, він на 2 роки молодше моєї доньки.
- Ваша донька – красуня, вона схожа на кінозірку.
- Вона поліглот – знає англійську, французьку, німецьку, китайську та португальську мови. Я дуже пишаюся своїми дітьми.

***

- Що трапилось з Віктором, він захворів?
- Так, але ліки тут не допоможуть (useless in this case).
- Що ви маєте на увазі?
- Віктор безнадійно закоханий.

- І якщо я не помиляюся, у вірусу світле волосся, блакитні очі, він стрункий, з довгими ногами та неперевершеною посмішкою.
- Нам слід відволікти його від думок про неї. Вона заміжня, закохана та щаслива.

11. Situations for spontaneous projects

1. You haven't seen your friend for many years. At last you meet. You go to a restaurant to remember your student's years. You see a photo in his hands. He acquaints you with his family in the photo. You show him the photo of your wife.
2. A friend of yours is arriving to-night. Unfortunately, you fall ill with very high temperature and can't drive to the airport to meet your friend. You ask your (mother, father, sister, friend) to meet your English friend. But you don't have a photo, you describe his appearance. But your (mother, father, sister, friend) fail to meet your friend. Everybody is at a loss.
3. You've heard a new head is coming to your department. Somebody finds out that he (she) worked with him and tells everything he (she) knows about him.

TEST-CONTROL FOR MODULE 5
Task I. Максимальна кількість балів: 10 (Total 10)
Choose the correct word to complete the sentences.

1. They informed that there … suggested a 5% reduction of sulfur dioxide.

A) has been	C) had been
B) will have been	D) had had

2. Energy … by the Sun.

A) was produced	C) has been produced
B) is produced	D) will produce

3. A new campaign for energy survival … at the end of the 20th century.

A) launch	C) will launch
B) is launched	D) was launched

4. We … disconnected already before the talk was over.

A) have been	C) will have been
B) has been	D) had been

5. The automobile industry … a major role in the economic development of the developing country by the middle of the 21st century.

A) will play	C) will have played
B) will be play	D) will have been playing

Task II. Total 20
Give English or Ukrainian equivalents of the following.

1. Тверде паливо
2. Ви не проти пообідати?
3. Може підемо в художню галерею?
4. Із задоволенням (2 слова)
5. Transportation method
6. Metropolitan area
7. To be sincere
8. Фотосинтез
9. Екосистема
10. Commercial use
11. Human and animal labor
12. Споживання енергії
13. Aquatic ecosystems
14. Вас до телефону
15. Ви невірно набрали номер
16. Можна пана Н. до телефону?
17. Говоріть голосніше.
18. Речовина, що розчиняє
19. Накопичення кислотних опадів
20. Acidified lakes

Task III. Total 10
Use the correct verb form to open the brackets.

1. The highly industrialized countries (to use) most of the world energy.
2. The amount of energy for residential use (to vary) greatly throughout the world.
3. If he (to change) jobs, he would be a lot happier.
4. If the food (to be) so bad, he wouldn't have complained.
5. 2000000 kilometers of natural gas distribution pipelines (to use) by us today.

Task IV. Total 10
Compose questions with the question words in brackets.

1. The Chinese used some gas and oil as early as 1000 B.C. (Who?)
2. Today we use about 2000000 kilometers of natural gas distribution pipelines. (What?)
3. The main use of oil was to make kerosene, a fuel for lamps. (What?)
4. India experiences wood shortages just as the North America. (Who?)
5. Acid deposition is the accumulation of acid-forming particles. (Common)

Task V. Total 10
Insert prepositions where it is necessary.

1. Sulfur dioxide contributes … acid formation.

2. She graduated … the higher school and teaches ecology.
3. He always refers … this author.
4. It is easy to deal … him.
5. These factors contribute … acid rain damage.

Task VI. Total 10
Translate into English.

1. Деревина перевозиться на фабрики вантажівками, потягами та водним транспортом.
2. Він вивчив класифікацію кислотних дощів до семінару.
3. Його запитали, коли відбувалися вологі реакції.
4. Сучасні сміттєспалювальні заводи скоро будуть будуватись на Україні.
5. Я читаю статтю про використання енергії.

Task VII. Total 10
Compose sentences with the following words and translate them.

1. 1938, Germany, in, atom, of, occurred, in, an, fission, atom, first, controlled, the.
2. Are, in, there, fact, a, items, few, of, that, cannot, recycled, be, domestic, waste, only.
3. The, of, us, gas, did, natural, rapidly, as, as, oil, of, use, the, increase, not, use.
4. Apartment, I, my, was, new, to, a, friend, helping, move, to.
5. When, back, gets, he, me, to, him, call, you, ask, would.

Task VIII. Total 10
Give a smart translation:

More cars meant more jobs in the automobile industry, the steel industry, the glass industry, and hundreds of other industries. Constructing thousands of kilometers of roads created additional jobs. From their beginnings as suppliers of lamp oil, the oil companies grew into one of the largest industries in the world. Thus, the automobile industry played a major role in the economic development of the industrialized world. All this wealth gave people more money for cars and other necessities of life. The car, originally a luxury, was now considered a necessity.

The car not only created new jobs but also altered people's lifestyles. Vacationer could travel greater distances. New resorts and chains of motels, restaurants, and other businesses developed to serve the motoring public, creating thousands of new jobs. Because people could live farther from work, they began to move to the suburbs.

Task IX. Total 10
Give your opinion on the following (not less than 15 sentences):

To solve the problem of environmental pollution it is necessary to pay attention to the alternative sources of energy.

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MODULE 6
GLOBAL WARMING AND CLIMATE CHANGE
CURRICULUM MATERIALS FOR MODULE 6
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 6

Тема1. Неособові форми дієслова**.**Інфінітив.Форми інфінітива та їх переклад**.**Функції інфінітива у реченні**.** Дієприкметник.
Тема 2. Аналітичне читання: тексти за фахом з базових підручників.
Тема 3. Усна практика: Apartment. Hotel. Student's life.Реферування аутентичних текстів за фахом. Діалогічне мовлення за вказаними темами.Аудіювання за темою модуля 6. Проектне дослідження за модулем 6.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольна робота за матеріалами модулю 6.
У результаті вивчення модуля 6 студент повинен
знати: Неособові форми дієслова Інфінітив. Форми інфінітива та їх переклад. Функції інфінітива у реченні. Дієприкметник.
вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 6
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 6

6.1 UNIT 11. THE GREENHOUSE EFFECT

"Reports forecast global warming crisis because of the greenhouse effect"

(Eric Pianin U. N. expert in "Greenhouse effect")

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. absorb (v) – всмоктувати, абсорбувати
2. benefit (v) – допомагати, приносити користь
3. consequences (n) – наслідки, важливість
4. controversial (adj) – спірний, дискусійний
5. convert (v) – перетворювати, переробляти
6. creature (n) – творіння, жива істота
7. double (v) – подвоювати, бути вдвічі більше
8. expect (v) – очікувати, сподіватися
9. exposed (adj) – той, що був виставлений, показаний
10. feedback (n) – зворотній зв'язок
11. greenhouse (n) – теплиця
12. indeed (adv) – дійсно, насправді
13. inhabitant (n) – мешканець
14. intensified (adj) – посилений
15. interior (n) – внутрішність
16. lead (v) – вести, приводити, керувати
17. melt (v) – танути, плавитися
18. regard (v) – приймати до уваги, розглядати
19. shift (v) – переміщувати (ся), передавати іншому
20. tiny (adj) – маленький
21. trap (v) – заманювати, ставити пастку
22. uncertainty (n) – невпевненість, нерішучість
23. worldwide (adj) – розповсюджений по всьому світу, світовий, всесвітньовідоми

II. Vocabulary check.

Activity 1. Give English equivalents of the following.

1. парниковий ефект
2. крім того
3. жива істота
4. шкідливий вплив
5. локальний вплив
6. наукова фантастика
7. полярні райони
8. полярний льодовий покров
9. особливість (характер) дощових опадів
10. рівень моря
11. низина

12.привикати

Activity 2. Read and translate the following terms.
Chlorofluorocarbon, methane, nitrous oxide, carbon dioxide, infrared, radiation.

Activity 3. Match the following words with their explanations.

to alter	to say, tell in advice
to predict	to make or become different, change in character, appearance, etc
benefit	a device for catching animals (mice) etc
to suffer	situated inside; of the inside; inland; away from coast
a trap	to allow to go; set free; unfasten
interior	advantage; profit; help
surface	that which is follows or is brought about as the result or effect
to release	to feel or have pain, loss, etc
consequence	the outside of any object

III. Grammar review

Інфінітив (The Infinitive)

Інфінітив – неособова форма дієслова, яка поєднує властивості дієслова і іменника. Інфінітив звичайно вживається з часткою ***to*.**

Форми інфінітива та їх переклад

форми	Active	Passive
1. Simple	to help I am glad to help her. Я радий допомогти їй.	to be helped I am glad to be helped. Я радий, що мені допомагають.
2. Continuous	to be helping I am glad to be helping him**.** Я радий, що допомагаю йому зараз.	
3. Perfect	to have helped I am glad to have helped him.	to have been helped I am glad to have been helped.

4. Perfect Continuous	Я радий, що допоміг їм. to have been helping I am glad to have been helping you. Я радий, що допомагав (допомагаю) вам (протягом якось часу).	Я радий, що мені допомогли.

Ознакою інфінітива в англійській мові є частка ***to***, але в багатьох випадках інфінітив вживається без частки ***to.*** Частка ***not*** перед інфінітивом вказує на заперечну форму.

Особливу увагу потрібно звернути на інфінітив у пасивному стані (Simple Infinitive), який дуже часто вживається в технічних текстах.

The engineer wants to help the workers. (Active)

The engineer wants to be helped. (Passive).

Після деяких дієслів у дійсному стані вживають **інфінітивний зворот**, що становить поєднання займенника у об'єктному відмінку або іменника у загальному відмінку з інфінітивом. Українською мовою речення з такми зворотом перекладають **складнопідрядним реченням**.

I want him to study greenhouse gases.

Я хочу, щоб він вивчав парникові гази.

They expect the conference on greenhouse effect to be held in France this June.

Очікують, що конференція з питань парникових газів відбудеться у Франції в червні цього року.

Інфінітив в Об'єктному звороті може вживатись також у пасивному стані , відповідаючи присудкові підрядного речення, що виражений дієсловом у пасивному стані.

I expect the problem of oxidation to be discussed at the meeting.

Я очікую , що проблема окислення буде обговорюватись на зустрічі.

Об'єктний інфінітивний зворот вживають після таких дієслів, як:

to assume	вважати
to like	подобатись
to hate	ненавидіти
to expect	очікувати
to think	думати
to believe	вірити, сподіватися
to suppose	сподіватися
to find	знаходити
to consider	рахувати, розглядати
to know	знати

to order	заказувати. наказувати
to ask	питати
to allow	дозволяти
to want	хотіти
to wish	бажати
to require	потребувати, вимагати
to maintain	підтримувати, стверджувати

Після дієслів, які виражають сприйняття за допомогою органів чуттів частка **to** перед інфінітивом не вживається.

to see	бачити
to watch	дивитись,спостерігати
to observe	спостерігати
to notice	відмічати
to hear	чути
to feel	відчувати

Exercise 1. Translate the sentences paying special attention to Complex Objects.

1. He didn't want us to be disturbed by the fact that winters were becoming warmer and natural disasters much powerful because of the climate warming.
2. Scientists believe greenhouse gases to be the cause of climate warming.
3. A laptop enables people to work on a plane.
4. She neglected the fact of greenhouse effect influence to be discussed at the meeting as a very important one.
5. They would like to be told about the consequences of the recent tsumani in South-East Asia.

Exercise 2. The words in the following sentences are in the wrong order. Rewrite them in the correct order.

1. me she to in myself taught believe.
2. dirty they me to their do work paid.
3. we atmosphere still know the don't results effect gases of greenhouse the on.
4. allow smoke don't they you to work at.
5. should be car encouraged makers gas with CO^2 less to produce with cars fewer.

Функції інфінітива

функції	приклад	переклад
1. підмет (звичайно перед таким інфінітивом	**To learn** the foreign language is important.	Вивчати іноземну мову важливо.

ставиться to)		
2. додаток	We decided **to wait** for her.	Ми вирішили зачекати на неї.
3 означення	Her wish **to win** was quite natural. Is there much work **to do/to be done** today?	Її бажання виграти було зовсім природним. Сьогодні багато роботи, яку потрібно виконати?
4. обставина мети або наслідків	I went to London **to learn** English. He left home, never **to be seen** again.	Я поїхав у Лондон, щоб вивчати англійську мову. Він залишив їм дім, і ніхто не бачив його знову.
5. частина складного додатку	I heard someone **open** the door. I'd like you **to find** him a job.	Я чув, як хтось відчинив двері. Я хотів би, щоб ви знайшли йому роботу.
6. частина складного підмета	She is known to have a fine collection of paintings.	Відомо, що у неї є гарна колекція живопису

Exercise 3.
Write the appropriate form of the infinitive.

1. She finished _____*to have finished*
2. He was driving _____
3. It has been taught_____
4. They had become_____
5. She tries_____
6. It is brought_____
7. They are studying_____
8. It will be accepted_____

Exercise 4.
Fill in the correct form of the infinitive or the –ing form. Mind the tenses.

1. He is not likely……(return) before five o'clock.
2. They might not …….(complain) about the meal if the service hadn't been so dreadful.
3. Man is said…….(invent) the wheel about ten thousand years ago.
4. They hope ……(make) a lot of money in their new business.
5. She's too tired ……(concentrate) on her work today.

Exercise 5.

Use the elements in brackets to complete the following sentences with the infinitive.

1. I don't want (he/to stay). I want (he/to leave) my house and never (to come back).
2. The answer made (he/to feel) as if he had been slapped in the face.
3. I wonder if anyone saw (you/to come out) of that house. If anyone saw (you /to leave), you'll be in trouble.
4. I'd like (this book/to publish).
5. She watched (they/to disappear) and slowly went back into the house.
6. For a long time I've been watching (he/to take over) all the important jobs in the company.
7. We told jokes and it made (the time/to pass).
8. She liked (everything/to keep) in perfect order.

Exercise 6.

Put the verbs in brackets into the correct form of the infinitive or the –ing form.

1. I suggest …….. (call) the cinema to find out what time the film begins.
2. It's no use……. (try) to make excuses. She won't believe you.
3. I look forward to……. (see) the artwork in the museum's latest exhibition.
4. She spent a long time…… (talk) on the telephone so she didn't finish her essay.
5. We were happy…….. (hear) that Mary is coming to visit us.
6. Will you let me……. (read) you some parts to tell me if you like them?
7. It was so nice of him……(send) me flowers.
8. It's raining. There's no point in……. (go) out now.
9. Would you be so helpful as…… (carry) this heavy bag for me?
10. You should…… (speak) to her when you saw her.

Exercise 7.

Fill in the correct form of the infinitive.

1. I've looked everywhere, but the file appears …(misplace).
2. He is not old enough…(allow) to stay out late.
3. I don't think I'll be able to make it tomorrow. I'm supposed …(meet) Jane for lunch.
4. She was only pretending…(read); she was really daydreaming.
5. I need you …(help) me prepare the food for the party.
6. The team is said …(win) the match through sheer luck.
7. The accident is believed…(cause) by reckless driving.
8. The newspaper received many calls from people claiming…(see) UFO.

9. He was the first British writer…(award) the Nobel prize for literature.
10. He is not likely …(return) before five o'clock.

Exercise 8.
Translate into English.

1. Індонезія має плани побудувати першу атомну електростанцію в сейсмічно небезпечній зоні.
2. Населення повинно контролювати дії влади.
3. Іміграція допомагає Сполученим Штатам підтримувати кількість населення у великих містах.
4. Кажуть, що Нью Йорк прийняв більше 1 млн. імігрантів з 2000 по 2006 рік.
5. Сподіваються, що слухи про швидке потепління клімату трохи перебільшені.
6. Неможливо зупинити рух людства до прогресу.
7. Чи не будете ви такі люб'язні, щоб пояснити мені причини появи озонової діри над Антарктикою?
8. У нього недостатньо терпіння, щоб бути вчителем.
9. Те, що вони скоротили кількість робітників, не було для нас несподіванкою.
10. Щоб наші діти могли дихати чистим повітрям, необхідно скоротити викиди парникових газів.

IV Pre-text discussion
Activity 1. Do you know that:

- Warming near the earth's surface occurs when the earth's atmosphere traps the sun's heat.
- The "greenhouse effect" was predicted by Professor Bert Bolin in the 1960th.
- At that time his prediction was regarded as science fiction.
- The "Greenhouse effect" is bringing significant changes to the Earth's climate.
- The sea-level will have risen by ½ meters by 2050.
- Millions of people today live less than one meter above sea-level.
- An intensive "greenhouse effect" could shift rainfall pattern.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The greenhouse effect will alter the life on the earth.
2. The oceans become warmer and store more heat and that they increase warming effect.

3. Intensified greenhouse effect could shift rainfall patterns and alter the ecological balance.

V. Read, translate text 11A.

Text 11A.

“Greenhouse effect”

In the 1960s Professor Bert Bolin predicted that the "greenhouse effect", caused by an increase in the amount of carbon dioxide ($C0^2$) in the atmosphere would lead to important changes in the Earth's climate. At the time his predictions were regarded as science fiction. But it is now generally agreed that the amount of carbon dioxide in the atmosphere will double from 0.03% to 0.06% in the next 50 years and that temperatures worldwide will rise by 2° Celsius.

Although a temperature rise of 2° may not seem significant, the local effects may be much greater: in polar regions a rise of 10° by 2025 is expected and in Northern Europe a rise of 4°. Indeed the first effects will be felt before the end of the century - perhaps they are already being felt...

But how does the "greenhouse effect" operate and why should such a tiny proportion of $C0^2$ have such a harmful effect? When living creatures breathe out or when things are burned $C0^2$ enters the atmosphere. Until recently all of this was absorbed by plants, which converted it back into oxygen.

However, the balance of nature has been disturbed. In power stations, in factories and in our cars, we are burning more and more fossil fuels (coal, oil and natural gas) and this produces huge quantities of $C0^2$ - 18 billion tons of it enter the atmosphere every year. Added to this, the destruction of forests means that less $C0^2$ can be converted into oxygen by plants. So, the amount of $C0^2$ in the atmosphere is increasing every year.

Greenhouse effect is a warming near the earth's surface that results when the earth's atmosphere traps the sun's heat. Without this effect, the average surface temperature of the earth would be about 59 Fahrenheit degrees (33 Celsius degrees) lower than it is.

As the temperature rises, the amount of water vapour in the air will increase and this too will absorb more of the earth's heat. The oceans too will become warmer and store more heat, so that they increase the warming effect.

According to Dr Syukuro Manabe of Princeton University, the polar icecaps will start to melt and the oceans will expand as more snow and ice melt. Because the exposed ground, formerly covered in snow, won't reflect the heat so well it will absorb more sunlight and this will lead to even more snow melting.

The greenhouse effect received its name because the earth's atmosphere acts much like the glass or plastic roof and walls of a greenhouse. Sunlight enters a greenhouse through the glass or plastic and heats the interior. The roof and walls slow the escape of the heat.

Similarly, the earth's atmosphere allows most of the sunlight that reaches it to pass through and heat the earth's surface. The earth sends the heat energy back into the atmosphere as *infrared radiation.* Much of this radiation does not pass freely

into space, because certain gases in the atmosphere absorb it. These gases include carbon dioxide, ozone, and water vapor. They grow warm and send infrared radiation back toward the earth, adding to the warming at the surface.

The amount of carbon dioxide in the atmosphere is increasing, chiefly because of the burning of the *fossil fuels* coal, oil, and natural gas. The destruction of forests, which absorb the gas, is also increasing the carbon dioxide level. Some scientists believe that from the mid 1900's to the late 2000's, the amount of carbon dioxide in the atmosphere will have doubled. It is estimated that this doubling will intensify the greenhouse effect and increase the earth's average surface temperature by 2.7 to 10 degrees Fahrenheit (1.5 to 5.6 degrees Celsius). Other gases being released into the atmosphere in growing amounts include chlorofluorocarbons, methane, and nitrous oxide. These gases could double the climate-changing effect of the carbon dioxide.

Many studies indicate that the earth has warmed about 1 Fahrenheit degree (0.6 Celsius degrees) since the late 1800's. The six warmest years on record have occurred in the 1980s. But this variation in temperature may have other causes than the greenhouse effect. It is hard to predict the specific consequences of future warming because the atmosphere, land, and oceans interact in complex ways. Some scientists believe an intensified greenhouse effect could shift rainfall patterns, raise the sea level, and alter the ecological balance.

It is predicted that the level of the sea will have risen by ½ to 1½ meters by 2050 and this will affect many low-lying areas of the world - millions of people today live less than one meter above sea level.

Some areas may actually benefit: the higher temperatures may allow a longer growing season, for example, for northern Europeans, the extra warmth may be welcome - but there is also likely to be increased rainfall.

But many areas may suffer: the southern states of the USA can expect hotter summers and less rainfall.

The experts agree that the 'greenhouse effect' will bring significant changes to the Earth's climate. The inhabitants of this planet will have to get used to living in a hotter world.

VI. Comprehension check

Activity 1. Do the false/true activity

1. CO^2 is converted naturally into oxygen by plants and trees.
2. Professor Bolin’s prediction was not taken seriously at first.
3. The inhabitants of our planet are to get used to live in a hotter world.
4. The level of the sea will not have risen by 2050.
5. The greenhouse effect received its name because the earth’s atmosphere acts as a metallic house.
6. The earth doesn’t send the heat energy back into the atmosphere but stores it.
7. Infrared radiation does not pass freely into space.

8. Infrared radiation is absorbed by certain gases in the atmosphere.
9. The gases absorbing infrared radiation include only carbon dioxide.
10. The gases in the atmosphere grow warm and send infrared radiation back to the earth.

Activity 2. Look through text 11A carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. The greenhouse effect will bring significant changes to the _____.
2. The greenhouse effect is caused by the increase in the amount of _____.
3. Bert Bolin predicted that the greenhouse effect would lead to important changes in _____.
4. A tiny proportion of CO2 has a _____.
5. When living creatures breathe out, CO2 enters _____.
6. The balance of nature has been _____.
7. Plants convert CO2 back into _____.
8. We burn more and more fossil fuels in _____.
9. The amount of CO2 in the atmosphere is _____ every year.
10. Dr. Syukuro Manabe considers that polar icecaps will start _____.

VII. Discussion

Activity 1. Define the logical parts of text 11A entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 11A.

Activity 3. Translate in writing and reproduce.

- Is the name of Mr. Bert Bolin familiar to you?
- No, I hear it for the first time. And what is he?
- Mr. Bolin is a scientist, an ecologist.
- And what is he famous for?
- He was the first to predict the greenhouse effect.
- Now, its clear.

***

- Helen! I would like to continue speaking about Professor Bert Bolin. I'd like to know when he predicted the greenhouse effect.
- It was in the 60-s last century.
- And how did scientists react towards his prediction?
- You see, at that time his predictions were regarded as science fiction.
- And what do ecologists think about it now?
- Now it is generally agreed that the amount of carbon dioxide in the atmosphere will double from 0.03% to 0.06% in the next 50 years.

- And what about temperature?
- Temperatures worldwide will rise by 2 º Celsius.
- Oh it's too much.

***

- What was winter like in your country?
- Oh! It was very warm. No frosts at all. Trees were green and snowdrops appear.
- And what is the average temperature in your region?
- It's usually 20-25 ºC. But this winter it was +1 - +5 ºC.
- You are a future ecologists. Why is it so?
- I think, it's because of the greenhouse effect.
- Is it harmful for vegetation and people?
- I am sure it's rather dangerous both for the health of people and vegetation.
- The inhabitants of our planet will have to get used to living in hotter world!
- I share your opinion.

***

- What are you reading?
- I'm reading an article by Dr. Syukuro Manabe of Princeton University.
- Did you hear anything about him?
- Yes, if I'm not mistaken, he is a famous ecologist, investigating the problem of the "greenhouse effect" and recently made a wonderful report on the "greenhouse effect" at the international conference this May.
- Sure! He writes in this article that the polar icecaps will start to melt and the oceans will expand as more snow and ice melt.
- It's dangerous, isn't it?
- Very! We will face severe floods!

Activity 4. Make up your own dialogues on the theme "Greenhouse effect".

VIII. Skim text 11B and get ready to speak about the greenhouse effect.

Text 11 B

The Greenhouse Effect: Science and Policy

Global warming from the increase in greenhouse gases has become a major scientific and political issue during the past decade. That infrared radiation is trapped by greenhouse gases and particles in a planetary atmosphere and that the atmospheric CO2 level has increased by some 25 percent since 1850 because of fossil fuel combustion and land use (largely deforestation) are not controversial; levels of other trace greenhouse gases such as methane and chlorofluorocarbons have increased by even larger factors. Estimates of present and future effects, however, have significant uncertainties. There have also recently been controversial claims that a global warming signal has been detected. Results from most recent climatic models suggest that global average surface temperatures will increase by some 2º C to 6 ºC during the next century, but future changes in greenhouse gas concentrations and feedback processes not properly accounted for in the models could produce greater or smaller increases. Sea level rises of 0.5 to 1.5 meters are typically projected for the next century, but there is a small probability of greater or even negative change. Forecasts of the distribution of variables such as soil moisture or precipitation pattern have even greater uncertainties. Policy responses range from engineering countermeasures to passive adaptation to prevention and a "law of the atmosphere." One approach is to implement those policies now that will reduce emissions of greenhouse gases and have additional societal benefits. Whether the uncertainties are large enough to suggest delaying policy responses is not a scientific question per se, but a value judgment.

The greenhouse effect, despite all the controversy that surrounds the term, is actually one of the most well-established theories in atmospheric science. For example, with its dense CO^2 atmosphere, Venus has temperatures near 700º K at its surface. Mars, with its very thin CO^2 atmosphere, has temperatures of only 220º K. The primary explanation of the current Venus "runaway greenhouse" and the frigid Martian surface has long been quite clear and straightforward: the greenhouse effect. The greenhouse effect works because some gases and particles in an atmosphere preferentially allow sunlight to filter through to the surface of the planet relative to the amount of radiant infrared energy that the atmosphere allows to escape back up to space. The greater the concentration of "greenhouse" material in the atmosphere, the less infrared energy that can escape. Therefore, increasing the amount of greenhouse gases increases the planet's surface temperature by increasing the amount of heat that is trapped in the lowest part of the atmosphere. What is controversial about the greenhouse effect is exactly how much Earth's surface temperature will rise given a certain increase in a trace greenhouse gas such as CO^2.

Two reconstructions of Earth's surface temperature for the past century have been made at the Goddard Institute for Space Studies (GISS) and Climatic

Research Unit (CRU). Although some identical instrumental records were used in each study, the methods of analysis were different. Moreover, the CRU results include an ocean data set. These records have been criticized because a number of the thermometers were in city centers and might have measured a spurious warming from the urban heat island. In other cases thermometers were moved from cities to airports or up and down mountains and some other measurements are also unreliable. A critical evaluation of the urban heat island effect suggests that in the United States the data may account for nearly 0.4 ºC of warming in the GISS record and about 0.15 ºC warming in the CRU record. Because the U.S. data from where the urban heat island effect might be significant are only a small part of the total, these corrections should not automatically be made to the entire global record. However, even after such corrections for the United States are applied to all of the data, the global data still suggest that 0.5 ºC warming occurred during the past 100 years. Moreover, the 1980s appear to be the warmest decade on record; 1981, 1987, and 1988 were the warmest years on these records.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. The greater the concentration of "greenhouse" material in the atmosphere the less infrared energy can escape.
2. The 1980s appear to be the warmest decade on record.
3. The greenhouse effect is one of the most well-established theories in atmospheric science.
4. Forecasts of distribution of soil moisture or precipitation pattern have been great uncertainty.
5. Thermometers were moved from cities to airports or up and down mountains.
6. A critical evaluation of the urban heat island effect suggests that in the USA the data may account for nearly 0.4°C of warming.
7. Policy responses range from engineering countermeasures to passive adaptation to prevention and a "law of the atmosphere".
8. Estimates of present and future effects have significant uncertainties.
9. Global warming has become a major scientific and political issue during the past decade.
10. Global average surface temperatures will increase by some 2°C to 6°C during the next century.

Activity 2. Translate into English using the dictionary.

У біосфері вуглецю понад 12,000 млрд. т. Це пояснюється тим, що сполуки вуглецю безперервно виникають, змінюються і розкладаються.

Кругообіг вуглецю відбувається фактично між живою речовиною та двоокисом вуглецю. У процесі фотосинтезу, здійснюваного рослинами, двоокис вуглецю (вуглекислий газ) і вода за допомогою енергії сонячного світла перетворюються на різні органічні сполуки. Щорічно вищі рослини і водорості при фотосинтезі поглинають 200 млрд. т. вуглецю, якби вуглець не повертався в атмосферу , його запас у ній (700 млрд.т) швидко б вичерпався. Відмерлі рослини і тваринні організми розкладаються грибами і мікроорганізмами на СО, який теж повертається в атмосферу. Повний цикл обміну атмосферного вуглецю здійснюється за 300 років. Але частина вуглецю вилучається у вигляді торфу, нафти, вугілля, вапняку, мармуру, викопних відкладів і осадових порід.

IX. Long-term project work.
Prepare projects on the following topics.

1. “Greenhouse effect” in the regions of Ukraine.
2. Environmental damage caused by the “Greenhouse effect”.
3. Recent debates on the “Greenhouse effect” (conferences, articles, disputes).

X. Spoken English (Every day English)

1. Remember!

Ви приїжджаєте до незнайомого міста, треба поселитися у готелі, як це зробити? А як забронювати номер в готелі, щоб не зіткнутися з тим, що всі міста зайняті і вам ніде переночувати? А як найняти квартиру?
Ось бачите ,скільки питань. І як їх вирішити?
I’d like to … – Я би хотів (ла). -Ось основна фраза, яка всім потрібна.

2. Speech patterns.

Apartment (Hotel).

I’d like to reserve a room in your hotel.	Я би хотіла забронювати номер в цьому готелі.
I’d like to book a room in your hotel.	Я би хотіла забронювати номер в цьому готелі.
I’d like to have a single room.	Мені потрібен одномісний номер.
I’d like to stay in a suite.	Мені потрібен номер-люкс.
I’d like to rent an apartment.	Я би хотіла найняти квартиру.
I’d like to check in.	Я би хотіла зареєструватися
I’d like to check out.	Я би хотіла виписатися.
To move to a new apartment.	Переїхати на нову квартиру
To rent a flat.	Найняти квартиру з багатьма кімнатами.
To rent an apartment.	Найняти квартиру.
One bed-room apartment.	Двокімнатна квартира.
Two bed-room apartment.	Трикімнатна квартира.
To live in a studio.	Жити в однокімнатній квартирі.
To share a studio with smb.	Жити в однокімнатній квартирі з кимось.
The apartment is comfortable.	Квартира зручна.
The room is cozy.	Номер затишний.
The room faces the street.	Номер з вікном на вулицю.
Then room is noisy.	Шумний номер.

To reserve. To book. To rent. Double (single) room. Suite. To fill in (out)/ Arrival

card/ Studio/ Two-bed-room flat. Facilities. Accommodation. Real-estate.

What's the charge for the room?	Скільки коштує номер?
What's the rent?	Скільки коштує оренда?
What's the fare?	Скільки коштує проїзд?
How much is the service?	Скільки коштує обслуговування?
How much do I own you?	Скільки я вам винен?
How long are you planning to stay in our hotel?	Скільки ви збираєтесь жити в нашому готелі?
How long are you going to live in this rented apartment?	Скільки ви збираєтесь жити в цій орендованій квартирі?
How long do you want to live here?	Скільки ви хочете жити тут?
We can offer you an outside (inside) room.	Ми можемо запропонувати вам кімнату з вікном на вулицю (з вікном на двір)
We can offer you a room facing the yard.	Ми можемо запропонувати вам номер з вікном на двір.
We can offer you a flat on the third floor.	Ми можемо запропонувати вам квартиру на третьому поверсі.
Does the flat (apartment) (room) suit you?	Квартира (номер) вам підходить?
Does the charge suit you?	Платня вас влаштовує?
Will the rent suit you?	Вас влаштує оренда?
I can afford a large room (apartment, flat)	Я можу дозволити собі великий номер в готелі (квартиру).
I can afford a suite.	Я не можу дозволити собі номер-люкс.
You should address the rental agency to rent a flat.	Вам слід звернутися в агенцію з найму житла, щоб орендувати квартиру.
You should address the rental agent to see the flat.	Вам слід звернутися до агента з найму житла, щоб оглянути квартиру.
You should consult the real estate agency to buy a house.	Вам слід звернутися в агенцію з нерухомості, щоб купити будинок.
You should consult the real estate agent to find a house for renting.	Вам след звернутися до агента з нерухомості, щоб орендувати будинок.

3. Dialogues to be remember

***

- I hear you have moved to a new apartment, is it true?
- Yes it is. One of these days we'll arrange a housewarming party. I want you and your mother to be present.

- Thank you for the invitation. How do you like your new apartment?
- It's very comfortable. It is a three bedroom apartment with all modern conveniences: electric stove and a lot of built-in cupboards.
- Oh, what floor is it?
- Our apartment is on the tenth floor of a high-rise dwelling house.

***

- Is your apartment far from the centrel of the city?
- Rather. It takes me about an hour to get to the center by bus and by metro.
- Have you bought new furniture?
- We've bought wall units, two armchairs and a new icebox. We are planning to buy two carpets and a dining set.
- Good luck!

***

- Are you going to move to a new apartment?
- No, I'm not. We have been living in our two-room apartment for about eight years and we don't want to move anywhere.
- Your apartment is comfortable, isn't it?
- Yes, very. We arranged everything very nicely and I like it very much. We don't have much furniture, but we have got everything we need.
- I'm glad to hear it.

***

- I'd like to have a double room with a bath.
- How long are you planning to stay?
- I guess, I'll stay here for three or four days.
- I can give you an outside room on the seventh floor.
- Is it very noisy?
- By no means. The street is very quiet. It faces a big park.
- How much is the room?
- The charge is 100$ a day. Breakfast included.
- All right. I'll take it.

***

- Good evening. My name is Irene Bosk. I hope you've got my reservation.
- Could you spell your name, please?
- I-r-e-n-e B-o-s-k.
- Just a minute.
- There is a reservation on your name of a double room from today for three days.
- What floor is it on?
- On the 4th. Please, fill in the arrival card.
- Here you are!
- There is your key.
- Thanks a lot.

***

- Hello, is it Mir Hotel?
- Speaking.
- Could I speak to the chief receptionist, please?
- What can I do for you?
- I'd like to reserve a room at your hotel.
- No problems.
- What room do you like to reserve?
- A suite on the third floor.
- I can reserve for you a suite on the third floor, room 333 with all conveniences facing a quiet street. Does it suit you?
- Sure. Thank you.
- What is your name and when are you arriving?
- Mr. Ivan Volf. I am planning to stay for a week.
- I've done the reservation Mr. Volf.
- Thank you.
- Welcome to our hotel. We are looking forward to receiving you.

***

- Good afternoon. I'd like to check out. I am leaving tonight. Please, prepare my bill.
- Sure. The bill is ready in 10 minutes. Shall I send it to your room?
- No, I'll pay here at the desk.

***

- I know you've just returned from the USA, am I right?
- You are quite right!
- I am going to the USA one of these days.
- Is it possible to reserve a room there by telegram or by phone?
- Sure. And don't forget that the room charge includes breakfast and 13% service charge. You won't have to tip your maid and the waiter.
- I'll keep it in mind.

4. Translate in writing

***

- Доброго ранку! Мене звуть Дана Браун. Сподіваюся, Ви маєте номер для мене?
- Не могли б Ви назвати своє ім'я по літерах?
- Д-а-н-а Б-р-а-у-н.
- Хвилинку Міс Браун.
- Так, все вірно. Ми можемо запропонувати Вам одномісний номер від сьогодні на 6 днів.
- Чи є там душ?
- В номері окрема ванна кімната, телевізор, холодильник.
- Скільки коштує цей номер?
- 150 $ за добу.

- Платня прийнятна.

***

- У Вас є вільні номери?
- А який Ви бажаєте?
- Я би хотіла одномісний з усіма зручностями.
- Заповніть цей бланк, будь ласка. Підпишіть тут. Ось Ваш ключ.
- До речі, о котрій годині сніданок?
- Будь-коли між 7 і 10 ранку в ресторані. Це внизу.
- Можу я поснідати у себе в номері?
- Ніяких ускладнень.
- Ви можете замовити його за телефоном 0-1-1-1.

***

- В якому номері Ви живете?
- 1212.
- Яка вдача! Ми сусіди! Мій номер на цьому ж поверсі. Я проводжу вас туди.
- Дякую. Ви дуже добрі.

***

- Погода погана сьогодні, чи не так?
- Так, мабуть.
- Що трапилось? Ви виглядаєте таким засмученим (upset).
- Біда в тому, що я не можу жити в своєму номері.
- Що в ньому не так?
- Нічого поганого в самому номері немає. Кімната досить велика. Вона виходить вікнами на двір і тому не шумна.
- Вона затишна?
- Вона світла, чиста, затишна та сонячна. Мені вона дуже подобається. Але мені не подобається людина, яка живе у сусідньому номері. Він дуже голосно хропить всю ніч.

***

- Проходьте у вітальню, я повернусь через хвилину.
- Яке затишне місце!
- Меблів не багато.
- Нема нічого зайвого.
- Яке приємне поєднання кольорів: золотистий, коричневий, білий, трошки червоного та чорного і раптом ця зелена кімнатна рослина.
- Кімната виглядає гарно (cheerful)!

***

- Я чув, що Ви збираєтесь переїхати на нову квартиру?
- Ти не зовсім правий. Ми переїжджаємо в новий будинок, який нещодавно купили.
- А де він знаходиться?
- За містом. В 20 км від міста. Дивовижне місце! Поряд із будинком є озеро та ліс!

- Скільки часу Вам тепер потрібно, щоб добратися до роботи?
- Близько 30 хвилин.
- А будинок великий?
- Три рівні. Внизу гараж, сауна, басейн. На 2-му поверсі – хол, кухня і на
- 3-му – 4 кімнати , ванна.
- У будинку всі зручності?
- Цілком.
- Скільки коштує такий будинок?
- 50,000 доларів. Але він того вартий (it is worth every penny of costs).
- Мої вітання!
- Дякую

***

- У вашій квартирі багато меблів?
- Ні. Все, що необхідно.
- Нова квартира дуже зручна, чи не так?
- Так. І мені вона дуже подобається. Я запрошую тебе до себе. Ось моя візитка, тут усі мої телефони та адреса.
- Дякую за запрошення.

5. Situation for spontaneous projects.

1. You concluded a contract for a job for one of the automobiles firms. You moved to another city (country) together with your family and a cat. The firm can't provide you with an apartment. So you consult a real-estate agency. The real-estate agent tries to help you rent an apartment offering different apartments in various parts of the city.
2. You phone Intourist Hotel in Moscow to reserve a room in this hotel. You speak with the receptionist and explain him what you want. But it occurs that there is no an empty suite in this hotel… What will you do?
3. You advertised in a newspaper about selling of your own cottage in a suburb of a city. Many people call you about this advertisement. At last you manage to sell the property.

TEST/REVIEW

Task I. Максимальна кількість балів: 20 (Total 20)

a) Choose the correct word to complete the sentences.

b) Translate the sentences

1. The greenhouse effect is considered … significant changes to vegetation.

A) bring	C) to bring
B) has brought	D) will bring

2. The gases … infrared radiation included not only carbon dioxide.

A) absorbed	C) to absorb
B) absorbing	D) to have absorbed

3. He went to the conference … on the greenhouse effect in his region.

A) to have reported	C) was reported
B) report	D) to report

4. Global average surface temperatures … by some 2 to 6°C this century.

A) to increased	C) to increase
B) have increased	D) is to increase

5. … a room in our hotel you should phone us beforehand.

A) reserve	C) had reserved
B) have reserving	D) to reserve

Task II. Total 20

Give English or Ukrainian equivalents for the following.

1. Шкідливий вплив
2. Парниковий ефект
3. Рівень моря
4. Локальний вплив
5. Variation in temperature
6. To predict the specific consequences
7. Destruction of forests
8. Increased rainfall
9. Тверде паливо
10. Science fiction
11. The escape of the heat
12. Інфрачервоне випромінювання
13. Tiny proportion of CO_2
14. Breathe out
15. Я не можу дозволити собі.
16. Мені потребен номер-люкс.
17. Я хотіла б зареєструватися в готелі.
18. Я б хотіла забронювати номер.
19. Квартира (номер) Вам подходить?
20. Платня Вас влаштовує?

Task III. Total 5

Insert prepositions where it is necessary.

1. We can offer you a room … the third floor.
2. Here is the arrival card. You should check ….
3. I'd like to book a room … your hotel.
4. The balance … nature has been disturbed.

5. The Earth has warmed about 1 Fahrenheit degree … the late 1800's.

Task IV. Total 15
Compose questions.

1. The amount of CO_2 in the atmosphere is increasing every year. (General, subject, adverbial modifier of time).
2. The six warmest years occurred in the 1980's. (General, subject, adverbial modifier of time).
3. The higher temperature allows a longer growing season. (Subject, object, general).
4. Professor Bert Bolin was the first to predict the "greenhouse effect". (Subject, object, general).
5. Two reconstructions of Earth's temperature for the past century have been made at the Goddard Institute for Space Studies. (Subject, adverbial modifier of time, adverbial modifier of place).

Task V. Total 10
Translate into English.

1. Сподіваються, що чутки про швидке потепління клімату трохи перебільшені.
2. Конференція, яка проводилася на тему «Парниковий ефект у 21 сторіччі», висунула декілька цікавих теорій.
3. Щоб вирішувати проблему парникового ефекту, необхідно точно знати його походження та вплив на людину.
4. Вам слід звернутися в агенцію з найму житла, щоб орендувати квартиру.
5. Мені потрібен тихий та затишний номер. щоб працювати над статтею про вплив кислотних дощів на озера та ріки.

Task VI. Total 10
Compose sentences.

1. Greenhouse, intensified, could, effect, the, alter, balance, ecological.
2. Sea-level, of, people, today, live, million, than, above, meter, one, less.
3. Increasing, carbon, of, the, amount, is, atmosphere, dioxide, in.
4. A, is, near, warming, surface, the, earth's, greenhouse, effect.
5. Reserve, a, for, suit, can, floor, third, the, on, I, 333, with, all, room, conveniences, a, street, facing, quite, the.

Task VII. Total 20
Translate in writing without dictionary (Time for the task – 10 min).

The Greenhouse Effect and Global Warming

The study of chemistry may well be defined as the experimental science that explains and predicts changes in the form and composition of matter. Chemistry has definitely become a crucial part of our lives, but can it explain a phenomenon that many scientists believe is currently occurring in our atmosphere at an astonishing rate? Global Warming, also referred to as The Greenhouse Effect, is the process by which the Earth's annual temperature increases by a significant amount over an extended period of time.

The words Global Warming and The Greenhouse Effect are many times used interchangeably, but the two words differ greatly in meaning. Global Warming is the process by which the Earth's annual average temperature increases by a significant amount over a relatively extended period of time. The Greenhouse Effect, on the other hand, is the term used to describe the effect on the Earth's temperature that results from the capture of heat by molecules of carbon dioxide, water vapor, and other gases in the Earth's atmosphere.

The Greenhouse effect is a naturally occurring process that allows the earth to heat so that human habitation is possible.

6.2. UNIT 12
GLOBALWARMING

The greenhouse effect rising global temperatures already responsible for shrinking glaciers and vanishing permafrost eventually could touch off climate changes that would literally alter ocean currents, wipe away huge portions of Alpine snowcaps and aid the spread of cholera and malaria.

Wilson H. 1994 (Global and hemispheric temperature anomalies)

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. abundant (adj) – рясний, багатий
2. aquatic (adj) – водяний, водний
3. assessment (n) – оцінка, сума оподаткування
4. bedrock (n) – корінна порода, ґрунт (поклади)
5. buffer (n) – буфер
6. comprehend (v) – розуміти, осягати
7. deposition (n) – відкладення, накип

8. downwind (adj) – підвітряний
9. drought (n) – сухість, засуха
10.excessive (adj) – надмірний
11.experience (n) – досвід
12.flood (n) – повінь, потік
13.glacial (adj) – льодовий, холодний
14.infertile (adj) – неплідний, безплідний
15.insoluble (adj) – нерозчинний
16.melt (v) – танути, плавитися, звітрюватися
17.occur (v) – траплятися
18.prediction (n) – прогноз, пророкування
19.ratio (n) – відношення, пропорція
20.respiration (n) – дихання, вдих та видих
21.severe (adj) – суворий, жорстокий
22.straightforward (adj) – прямий, чесний, відвертий
23.transparent (adj) – очевидний, явний
24.trend (n) – напрямок, тенденція
25.watershed (n) – водорозділ, басейн ріки

II. Vocabulary check.

Activity 1. Give Ukrainian equivalents of the following.

1. assessment and conclusion
2. aquatic ecosystem
3. acid deposition
4. infertile soil
5. buffering capacity
6. sea level
7. greenhouse gases
8. average temperature
9. polar glaciers
10.sketchy data
11.profound effect
12.energy utilization
13.shrinking supplies
14.dioxide level
15.infrared radiation

Activity 2. Match the following words with their explanations.

accurate	send rays of light or heat
regardless	mutual relationship
to concern	to join with others in giving help (money, etc) for a

	purpose
to contribute	to have relation for connection
correlation	not to look closely at smth. carefully
to store	to make a start at doing smth; to try
temperate	the act of imposing
to attempt	kept ready for use
imposition	free from extremes of heat or cold
to radiate	careful and exact; free from error

III. Grammar review

Неособові форми дієслова

Неособові форми дієслова виражають дію без зазначення особи, числа і способу , не мають дієслівних часових форм, а лише вказують на час, співвіднесений з моментом дії, що виражені дієсловом в особовій формі. Неособові форми дієслова виконують різні функції членів речення, крім присудка.

Неособові форми дієслова включають Дієприкметник (The Participle), Інфінітив (The Infinitive) та Герундій (The Gerund).

Дієприкметник (The Participle)

Дієприкметник – це не особова форма дієслова , яка поєднує в собі властивості дієслова, прикметника і прислівника.

Дієприкметник Participle 1(-ing)		**asking**	
	Active	**Passive**	
Simple	asking	being asked	дія одночасна
Perfect **Participle II (-ed)**	having asked	having been asked **asked**	дія попередня

Форми дієприкметника співпадають з формами герундія.

У реченні дієприкметники I та II вживаються у таких функціях:

1. частини присудка і перекладаються дієсловом в особовій формі.
   He is writing a letter.- Він пише листа.
2. означення
   The playing boy is my son.- Хлопчик, який грається, це мій син.
   The results obtained were promising. Отримані результати були обнадійливими.
3. обставини
   While reading he made notes. Читаючи, він робив помітки.
   Having finished the experiments, he compared the results. Коли він закінчив експерименти, він порівняв результати.

В англійській мові дієприкметник утворює синтаксичні комплекси з іменниками та займенниками. Дієприкметник входить до складу трьох комплексів: об'єктного дієприкметникового комплексу (**the Objective Participle Complex**), суб'єктного дієприкметникового комплексу (the **Subjective Participle Complex**) та незалежного дієприкметникового комплексу (**the Absolute Participle Complex**).

У реченні ***об'єктний дієприкметниковий комплекс*** виконує функцію складного додатка після дієслів: **to see, to hear, to feel, to watch, to notice, to find, to observe**:

I saw her coming out. - Я бачив, як вона виходила.
I watched the snow falling. - Я спостерігав, як падає сніг.

Суб'єктний дієприкметниковий комплекс вживається переважно з дієсловами, які виражають сприймання за допомогою органів чуттів (to see, to feel, to hear, to watch, to observe) у пасивному стані.

A plane was heard flying high in the sky. - Було чути, як високо в небі летів літак.

Незалежний дієприкметниковий комплекс перекладається на українську мову:

a) підрядним обставинним реченням

The letter being written, I went to post it. - Коли лист був написаний, я пішла відправити його.
The rain having stopped, we went home. - Коли дощ ущух, ми пішли додому.

b) простим реченням , що входить до складносурядного:

They quickly went out of the house, John accompanying her to the station.- Вони швидко вийшли з дому, і Джон провів її до вокзалу.

c) дієприслівниковим зворотом:

Her face smiling, she came into the room. – Усміхаючись, вона увійшла в кімнату.

Exercise 1.

Read the following sentences and decide which of the given meanings is the correct one.

1. During the development, we stopped to think about the difficulties.
a) We stopped thinking about difficulties and we don't think about them now.
b) For a short time, during the development, we did not think about the difficulties.
c) We did think about the difficulties during the development phase.

2. I like to call customers to check that they are happy a few weeks after buying a machine from us.
a) I think it is a good policy to check that the customer is happy.
b) I really enjoy calling customers to check that they are happy.
c) I would like to call customers, to check that they are happy.

3. I was trying to contact the firm last week.
a) I attempted to call the firm last week.
b) I succeeded in contacting the firm last week.
c) I did not attempt to call the firm last week.

Exercise 2.

Fill in the blanks with participle I or participle II of the following verbs*: to disappoint, to excite, to bore, to interest, to confuse, to surprise, to tire, to amuse.*

1. I never found this sort of shows in any way …, so I won't join you.
2. I thought you were not…and for that reason did not offer you a chance.
3. Whenever you feel…you may leave at once.
4. The tour was rather…-we couldn't see most of the places since the weather was pretty awful.
5. She is very…because she is going to New York this afternoon.
6. Are you…or were you expecting this news?
7. I've had a very…day at work today and I want to go to bed.
8. Most people were …that he won the championship.
9. I can't tell you how…I am. Let's better go and have a cup of coffee somewhere.

10. The situation was very….I did not know what to say or what to do.

Exercise 3.
Translate into English.

1. Ваша ідея дуже цікава. Розкажіть мені про неї побільше.
2. Неможливо, щоб він не знав наслідків Чорнобильської катастрофи.
3. Кажуть, що вирубка лісів призводить до повеней та зсувів грунту.
4. Подорож мене розчарувала. Я не чекав, що там буде настільки нудно.
5. Ви пам'ятаєте, як ви були на Північному Полюсі ?
6. Я ніколи не забуду, як купався у тій брудній воді.
7. Я дуже жалію, що тоді розказав вам всю правду.
8. Спробуйте зменшити використання пластикових пакетів – сміття стане менше.
9. Постарайтеся не забути принести свій конспект на урок.
10. Боюся, що ви пожалієте, що позичили їм таку велику суму грошей.

IV Pre-text discussion
Activity 1. Do you know that:

- Intergovernmental Panel on Climate Change was set up to study the issue of climate warming and to make recommendations.
- There are 4 main factors increasing the risk of damage from acid deposition.
- The average temperature of the Earth has increased by 0,3-0,6ºC.
- The year of 1995 was the warmest one of the 20^{th} century.
- A continued increase in temperature and sea level will go on.
- Man greatly increases the amount of greenhouse gases.
- An average increase in the temperature can lead to a global catastrophy.
- Global warming will have several effects on the climate of the world.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The world may be getting warmer.
2. Acid rains bring great damage.
3. An average increase in the temperature of the earth could have a profound effects on land and health of people.

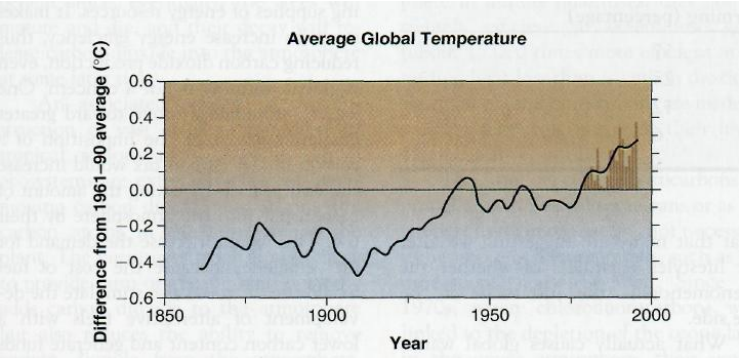
V. Read, translate text 12A.

Text 12A.

"Global warming"

During the 1980s, scientists, governments, and the public became concerned about the possibility that the world may be getting warmer. The United Nations Environment Programme established an Intergovernmental Panel on Climate Change (IPCC) to study the issue and make recommendations. Its First Assessment was published in 1990. In 1996 the IPCC published its Second Assessment and concluded that climate change is occurring and that it is highly probable that human activity is an important cause of the change. The IPCC has reached several important conclusions.

1. The average temperature of the earth has increased 0.3-0.6°C (1995 was the warmest year on record) and sea level has risen 10-25cm in the last 100 years.



Changes in Average Global Temperature.

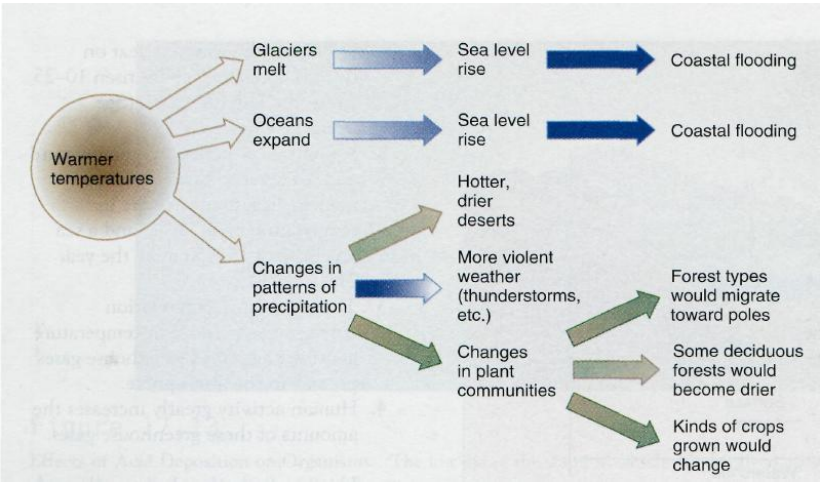
Despite considerable variation, there has been a general trend toward increasing temperatures. Nineteen ninety-five was the warmest year on record.

2. A continued increase in temperature and sea level will occur. Various models suggest an increase in temperature of 1-3.5°C and the sea level rise of 15-95 cm by the year 2100.

3. There is a strong correlation between the increase in temperature and the amount of greenhouse gases present in the atmosphere.

4. Human activity greatly increases the amounts of these greenhouse gases.

It is important to recognize that, although a small increase in the average temperature of the earth may seem trivial, this increase could set in motion changes that could significantly alter the climate of major regions of the world. Sea level would rise for two reasons. Because of the warmer temperatures, water stored in polar glaciers would melt, adding to the amount of water in the oceans. In addition, an increase in temperature would cause the waters currently in the oceans to take up more space, resulting in a rise in sea level. This would result in flooding of coastal areas. The land area of some island nations and countries such as Bangladesh would change dramatically as flooding occurred.



Effects of Global Warming. Global warming would have several effects on the climate of the world. The climate changes would have important impacts on human and other living things.

An average increase in the temperature of the earth could also have profound effects on land. An obvious conclusion is that there will be more "hot" days and fewer "cold" days. This has quite different consequences depending on where one lives. More hot days in areas that already are hot could add significantly to the stress on plants, humans, and animals. Temperate climates of the world could shift northward, and many areas that are currently temperate could be converted to hot, dry regions. Another outcome would be changes in the weather a region would experience. Rain patterns may change; droughts may become more severe in some regions while excessive rainfall may cause problems in other regions. Changes in climate would influence the kinds of plants and animals that could live in an area. Thus climate change would cause changes in natural communities of organisms and affect agriculture as well.

These predictions are based on computer models of climate. Some scientists have criticized the predictions as being inaccurate and constructed from sketchy data. However, as more accurate information is gathered and inserted into the models, the general conclusions remain the same. It is difficult for the general public to comprehend these changes or see evidence of them since each of us experiences only our own local weather and climate. Also, there will always be short-term variations in weather patterns. The models, however, are attempting to predict the long-term trends. The consequences of a global warming would be so great that many are suggesting we alter our lifestyles regardless of whether the phenomenon is true, just to be on the safe side.

VI. Comprehension check

Activity 1. Do the false/true activity

1. The average temperature of the earth has increased by 10-15ºC.

2. Lakes, the areas around the lakes, the soil contribute to acid rain damage.
3. Different models suggest a decrease in temperature of 1-3,5ºC.
4. Human activity both increases and decreases the average temperature of the Earth.
5. There is correlation between the increase in temperature and the amount of greenhouse gases.
6. An average increase in the temperature of the earth could have profound effects on land.
7. Many areas that are temperate can be converted to hot, dry regions.
8. Droughts can't become more severe in some regions of the world.
9. Changes in climate would influence all kinds of plants and animals living in this or that area.
10. Global warming would have several effects on the climate of the world.

Activity 2. Look through texts 12A, B carefully. Then complete the followings to make suitable sentences according to the meaning of the text.

1. Many predictions are based on computer _____.
2. Many scientists consider predictions about global warming to be based on _____.
3. Forests types would migrate _____.
4. Several gases in the atmosphere are transparent to light but absorb _____.
5. In a greenhouse the glass allows light to enter but retards _____.
6. Carbon dioxide is the most abundant of _____.
7. A major step towards slowing global warming would be to increase _____.
8. _____ would increase the cost of fuels by taxing the amount of carbon in the atmosphere.
9. Another approach to the solution of the global warming is to increase the amount of _____.
10. The models are attempting to predict _____.

VII. Discussion
Activity 1. Define the logical parts of text 12A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 12A.
Activity 3. Translate in writing and reproduce.

- Привіт! Як справи?
- Не заважай! (Don't interfere) .Я слухаю лектора.
- А ось і дзвоник! Давай підемо погуляємо в парку. Погода чудова, чи не так?

- Ти чимось засмучена? Що трапилось?
- Я весь час думаю про глобальне потепління. Воно загрожує людству реальною трагедією.
- Не турбуйся! Екологи роблять все можливе, щоб вирішити цю проблему.
- Будемо сподіватися на краще.

***

- Ти знаєш, які фактори збільшують ризик збитку від кислотних опадів?
- Я чула про це. Якщо я не помиляюсь, (If I am not mistaken) – це озера, які розташовані підвітряно від основного джерела забруднення повітря та місцевість навкруги озер, що являє собою дуже тверду, нерозчинну кам′яну породу, вкриту шаром неродючого ґрунту.
- А ти знаєш, який рік був найтеплішим?
- 1995. Це –найтепліший рік у 20-му сторіччі!
- А як щодо рівня моря?
- Рівень моря піднявся на 10-25 см за останні 100 років.

***

- Які можуть бути основні результати глобального потепління?
- Глобальне потепління може дуже сильно вплинути на клімат Всесвіту.
- Що це означає?
- Зміна клімату могла би негативно вплинути на людей і навколишню природу.
- А саме?
- Підвищення температури може призвести до танення льодовиків, різноманітних повеней, розширення океанів, підвищення рівня моря ,тощо.
- А ти знаєш основні парникові гази?
- Ну, двоокис вуглецю, метан, окис азоту, фтор або фторзаміщені вуглеці.

Activity 4. Make up your own dialogues on the theme “Global warming”.

VIII. Skim text 12B and get ready to speak about the global warming.

Text 12B.

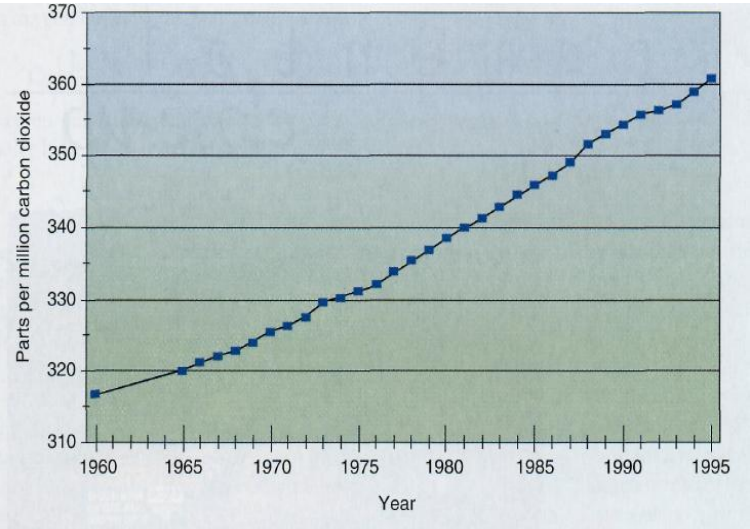
What actually causes global warming? An explanation is relatively straightforward. Several gases in the atmosphere are transparent to light but absorb infrared radiation. These gases allow sunlight to penetrate into the atmosphere and be absorbed by the earth's surface. This sunlight energy is reradiated as infrared radiation (heat), which is absorbed by the gases. Because the effect is similar to what happens in a greenhouse (the glass allows light to enter but retards the loss of heat), these gases are called greenhouse gases and the warming thought to occur from their increase is called the **greenhouse effect.** The most important greenhouse gases are carbon dioxide ($C0_2$), chloro-fluorocarbons (primarily $CC1_3F$ and CCl_2F_2), methane (CH_4), and nitrous oxide (N_20).

Major Greenhouse Gases

Gas	**Contribution to global warming (percentage)**
Carbon dioxide	57
Chlorofluorocarbons	25
Methane	12
Nitrous oxide	6

Table lists the relative contribution of each of these gases to the potential for global warming.

Carbon dioxide (CO2) is the most abundant of the greenhouse gases. It occurs as a natural consequence of respiration. However, much larger quantities are put into the atmosphere as a waste product of energy production. Coal, oil, natural gas, and biomass are all burned to provide heat and electricity for industrial processes, home heating, and cooking. These sources are increasing the amount of carbon dioxide in the atmosphere. Measurement of carbon dioxide levels at the Mauna Loa Observatory in Hawaii show that the carbon dioxide level has increased from about 315 ppm (parts per million) in 1980 to about 460 ppm in 2005.



Change in Atmospheric Carbon Dioxide. Since the establishment of a carbon dioxide monitoring station at Mauna Loa Observatory in Hawaii, a steady increase in carbon dioxide levels has been observed. Since 1960 the concentration of carbon dioxide in the atmosphere has increased by nearly 14 percent.

A major step toward slowing global warming would be to increase the efficiency of energy utilization. This would also be of value in conserving the shrinking supplies of energy resources. It makes sense to increase energy efficiency, thus reducing carbon dioxide production, even if global warming is not a concern. One way to stimulate a move toward greater efficiency would be the imposition of a carbon tax. A carbon tax would increase the cost of fuels by taxing the amount of carbon put into the atmosphere by their use. This would increase the demand for fuel efficiency because the cost of fuel would rise. It would also stimulate the development of alternative fuels with a lower carbon content and generate funds for research in many aspects of fuel efficiency and alternative fuel technologies.

Another approach to the problem is to increase the amount of carbon dioxide removed from the atmosphere. If enough biomass is present, the excess carbon dioxide can be utilized by vegetation during photosynthesis, thereby reducing the impact of carbon dioxide released by fossil fuel burning. Australia, the United States, and several other countries have announced plans to plant billions of trees to help remove carbon dioxide from the atmosphere. Many critics argue that this approach will only provide a short-term benefit since, eventually, the trees will mature and die, and their decay will release carbon dioxide into the atmosphere at some later time.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. It makes sense to increase energy efficiency that reducing carbon dioxide production.
2. Carbon dioxide is the most abundant greenhouse gas.

3. What actually causes global warming?
4. Another approach to the problem of global warming is to increase the amount of carbon dioxide removed from the atmosphere.
5. Australia, the USA and several other countries have announced plans to plant billions of trees.
6. Large quantities of CO2 are put into the atmosphere as waste products.
7. Carbon dioxide level has increased from 315 ppm in 1960 to about 460 ppm in 2005.
8. The trees will mature and die.
9. The effect is similar to what happens in a green house.
10. The decay of trees will release CO2 into the atmosphere.

Activity 2. Translate into English using the dictionary.

Вчені , проаналізувавши перші значні дослідження впливу підвищених температур на природний світ, прогнозують, що зміна клімату у наступні 50 років приведе до вимирання чверті всіх тварин і рослин на землі. Ці дані шокували вчених, які проводили дослідження. Вони прийшли до висновку ,що більше 1 млн видів буде загублено до 2050 року. Велика частина цих втрат – більше одного з десяти всіх рослин і тварин - вже не підлягають відновленню із-за викидів в атмосферу газів , які нагрівають атмосферу землі. Але вчені вважають, що дії, спрямовані на запобігання викидів парникових газів, ще можуть допомогти врятувати багато видів від такої загрози.

Дослідження, які проводились у Європі, Австралії, Центральній та Південній Америці і в Південній Африці, показали, що види, які живуть в гірській місцевості, мають більше шансів вижити, тому що вони можуть піднятися вище у гори, де холодніше.

IX. Long-term project work.
Prepare projects on the following topics.

1. Conference of global warming all over the world.
2. Influence of global warming on people' health.
3. Different views on the reasons of global warming.

X. Spoken English (Every day English)
1.Remember!

Немає нічого кращого в житті за студентські роки. Коли проходить цей час, ми завжди згадуємо студентські роки як найтепліші, найважливіші, доленосні сторінки нашого життя. Ми згадуємо улюблені предмети, шановних професорів, чудові миті студентства, коли ми юні, сповнені сил та попереду чудове життя, повне надій...

“What are you?” – звучить питання та дивовижна відповідь **“I am a student. I am a future ecologist, engineer…”**.

2.Speech patterns.

Student’s life.

What are you?	Хто ви?
Where do you study?	Де ви навчаєтесь?
What year student are you?	На якому курсі ви навчаєтесь?
What higher school do you study at?	В якому ВУЗі ви навчаєтесь?
When did you enter the Institute (University, Academy)?	Коли ви вступили до інституту (університету, академії)?
When will you graduate from the University (Institute, Academy)?	Коли ви закінчите університет (інститут, академію)?
I’ve entered the road-building faculty (the geographical faculty, the faculty of ecology)	Я вступив на дорожньо-будівельний факультет (географічний факультет, факультет екології)

To enter. To graduate from. To fail in (at). To lag (to fall) behind. To take an exam in. To pass an exam. Entrance exams. To be dull. To be interesting. To leave. To last. Postgraduate. Undergraduate. To deliver. Double period. Fresher.

Дуже цікавий час в студентстві – це те, як студенти проводять свій вільний час, яке в них хобі.

Sports and sporting activity. To win. To lose. To be interested in. To go in for… Pastime. To prefer. To care for. To be crazy about. To enjoy doing. To be keen on. To be popular.

What’s your hobby?	Яке твоє хобі?
My hobby is collecting coins.	Моє хобі – колекціонувати монети.
What is your favourite pastime?	Як ти любиш проводити час?
I am crazy about dancing since student’s time.	Я божеволію від танців ще зі студентських років.
What sports do you enjoy doing?	Якими видами спорту тобі подобається займатися?
I enjoy track and field athletics.	Мені подобається легка атлетика.
What are you keen on?	Чим Ви захоплюєтесь?
He is keen on football.	Він захоплюється футболом.
What is he interested in?	Чим він цікавиться?
We are interested in reading detective stories.	Ми цікавимось детективними історіями.

What did you care for when a student?	Чим Ви захоплювались, коли були студентом?
What was your hobby when you were a student?	Яке було у Вас хобі, коли Ви були студентом?
When a student I was good at playing tennis.	Я добре грав у теніс, коли був студентом.
My sister likes scuba-diving.	Моя сестра займається підводним плаванням.
To go in canoeing	займатися веслуванням на каное
To go in for sailing	займатися парусним спортом
To go in fishing	займатися риболовлею
To do some sporting activity	займатися фізкультурою
To go in for surfing (skate boarding, soccer, rugby)	займатися віндсерфінгом (катанням на скейті, футболом, регбі)
Your hobby seems to be very useful	Твоє хобі здається дуже корисним.
Your pastime seemed to be both practical and interesting.	Твоє проведення часу здається корисним і цікавим.
He seems to be carried away by this hobby – collecting pictures.	Здається він по вуха захоплений своїм хобі – колекціонування картин.

4. Dialogues to be remembered

***

- Good morning, Alex!
- Good morning, Mark!
- I am sorry to have kept you waiting.
- Don’t mention it. Where are we going?
- It’s up to you.
- In that case I suggest we should go to the tennis court and play a game of tennis.
- Good idea! I know you are the best at the University at playing tennis. How old were you we when you began playing tennis?
- Just a minute… Let me think… I was about eight years old when I started playing tennis. Since that time tennis has been my hobby.

***

- Hello, Valentina! Haven’t seen you for ages! What are you doing now?
- I study at the Kharkiv State University.
- Are you really? What faculty?
- At the faculty of ecology.
- What a coincidence! I study at the Kharkiv Automobile and Highway University. I study ecology too!

***

- How long does the course at the University last?
- It lasts 4 or 5 years. If you want to get only bachelor's degree, then you study for 4 years. If you want to get the master's degree you are to study for 6 years.
- How many double periods a day do you usually have?
- As a rule, we have 3 double periods, namely: 2 lectures and a seminar or practical hours.
- Do you have any free time?
- Certainly. In my pastime I go in for gymnastics and modern dancing.
- And do you have a hobby?
- A hobby? My hobby is growing flowers.
- How very interesting!

***

- I hear golf is very popular in Great Britain.
- Oh! Yes. Golf is played all the year round – on special golf field both in summer and winter.
- Have you passed your seasonal exams?
- Yes. I could hardly manage them. I was sure I would fail at last in two of them.
- The trouble in that you burn the candle at both ends. You can't play football all days running and study well.
- But you know I am crazy about football and try to score as many goals as possible.
- But you shouldn't forget about your studies.
- You are quite right! I'll follow your advice.

4. Translate in writing

***

- Я чув, що ти навчаєшся в США, в коледжі?
- Так, я вивчаю екологію в коледжі та через рік буду магістром екології.
- А ти займаєшся спортом в коледжі?
- Звісно. Спорт дуже популярний в Університетах та коледжах США.
- А яким спортом ти займаєшся?
- Я займаюся баскетболом і бейсболом. У баскетбол грають в школах, коледжах та клубах. Як дівчата, так і хлопці захоплюються грою в баскетбол і бейсбол.
- Які ще ігри популярні в Америці?
- Ну, бейсбол, теніс, футбол та ,звісно, гольф.
- Мені хотілося б подивитися гру в бейсбол. Де це можна зробити?
- Приходь до мене та ми подивимось на відео гру в бейсбол між нашим факультетом і факультетом електроніки.
- А хто виграв?

- Звісно, ми!

***

- Що Ви закінчили?
- Середню школу 10 років тому та Університет 2 роки тому.
- Навчання в Університеті було безкоштовне?
- Ні, я платив за своє навчання.
- Ви отримали диплом бакалавра?
- Не тільки. Я – бакалавр та магістр. Зараз навчаюся в аспірантурі.
- У Вас є аспірантура у Вузі?
- Так, через рік буду захищати кандидатську дисертацію.
- Ви дуже зайняті! А як Ви проводите вільний час?
- Я захоплююсь підводним плаванням. Можна сказати, що це моє хобі!

5. Situation for spontaneous projects

1. You are going to enter a higher school but you haven't yet chosen which one. You meet a friend of yours who is a first year student of the Kharkiv Automobile and Highway University. You ask him a lot of questions about the University, about student's life, about sport and sporting activity at the university. And he helps you (to) make your choice.
2. You study in Oxford (Cambridge, Eton). Your new British friend is asking you about sports, games, hobbies and past time of the youth in Ukraine.
3. You don't feel well. You attend the lecture of a well-known doctor about healthy ways of life in order to be "healthy, wealthy and wise". You are asking him about some pieces of advice.

TEST- CONTROL FOR MODULE 6

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. … about International Conference on global warming they decided to continue their experiment

A) having read C) read
B) reading D) after read

2. She is rather excited because she … to lecture on the global warming history.

A) were going C) will go
B) is going D) are going

3. I am looking forward to … the ecological party "The Greens".

A) join C) having joined
B) joining D) will join

4. … the test with global warming the scientists were very happy with the results.

A) having done C) after doing
B) when do D) will do

5. When a student I was fond of … tennis.

A) having go C) being going
B) went D) playing

Task II. Total 20

Give English or Ukrainian equivalents for the following.

1. Aquatic ecosystem
2. Неприродний ґрунт
3. Sea level
4. Парникові гази
5. Середня температура
6. Полюсні льодовики
7. Dioxide level
8. Infrared radiation
9. Використання енергії
10. Призводити до повені
11. Sketchy data
12. Вступати до Вузу
13. Закінчувати Вуз
14. Складати вступні іспити
15. Скласти іспити
16. „Провалитися” на іспиті
17. Цікавитися чимось
18. Займатися фізкультурою та спортом
19. To be carried away by this hobby
20. to investigate the problem

Task III. Total 15

Use correct prepositions and compose 5 sentences with the expressions.

1. To look forward … (at, to, for)
2. To be disappointed … (in, with, at)
3. To prevent … (of, to, from)
4. To succeed … (in, at, with)
5. To be fond … (for, of, at)
6. To depend … (at, in, on)
7. To be afraid … (of, on, with)
8. To get used … (to, from, in)

9. To enter … (in, –, at)
10. To result … (at, on, in)

Task IV. Total 10

Compose questions.

1. Transparent to light gases allow sunlight to penetrate into the atmosphere. (Subject, object, general)
2. This sunlight energy is reradiated as infrared heat. (Subject, object, general)
3. He decided to investigate the average increase of temperature. (Object).
4. Mexico city is an example of the city worst affected by smog (Subject, alternative, disjunctive).
5. Two reconstructions of Earth's surface temperature for the past century have been made at the Goddard Institute for Space Studies.(Subject, general, disjunctive).

Task V. Total 15

Translate into English.

1. Він вирішив припинити досліджувати цю проблему.
2. Я чула, як вона пояснювала теорію виникнення парникового ефекту.
3. Чоловік, що сидить біля вікна, відомий еколог, який займається льодовиками.
4. Професор зупинився на факторах, які спричиняють кислотні дощі.
5. Підвищення температури може призвести до танення льодовиків, розширення океанів, підвищення рівня моря.

Task VI. Total 10

Compose sentences.

1. You, interested, reading, stories, are, in, detective?
2. Suggest, we, I, go, to, should, court, the, and, tennis, a, of, game, play, tennis.
3. Invitation, written, the, I, having,to, it, post, been, went.
4. Greenhouse, at, was, to, been, have, table, the, round, effect, known, discussed, the.
5. rain, form,of, acid, a, originates, pollution, air, as.

Task VII. Total 20

Translate in writing without dictionary (Time for the task – 10 min).

International Air Pollution

Acid rain originates as a form of air pollution, but it may damage the environment in the form of water pollution. Also, air pollution that originates in one country may result in water pollution in another country. A particular nation may have stringent environmental control within its own boundaries but have environmental problems because of the actions of a neighboring country.

Recently, the phenomenon of acid rain has underscored the need for international cooperation in dealing with various environmental concerns. For example, an estimated 56 percent of the acid rain falling in Sweden originates outside of that country. The main sources of the pollutants are Germany and the United Kingdom because the west coast of Sweden receives winds from these countries. When these industrialized countries release more sulfur dioxide into the atmosphere, the result is more acid rain in Sweden. Since the 1930s, lakes in western Sweden have become more acidic by a value of two pH units.

In the 1930s the United Kingdom initiated a program to reduce air pollution. This program has been successful in that the air in the United Kingdom has become cleaner. But one of the country's solutions was to build taller smokestacks. As a result, more of the pollutants from the United Kingdom are transported to Sweden.

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MODULE 7
ACID DEPOSITION
CURRICULUM MATERIALS FOR MODULE 7
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 7

Тема1. Неособові форми дієслова**.** Герундій. Past Perfect . Past Perfect Continuous.
Тема 2. Аналітичне читання: тексти за фахом з базових підручників.
Тема 3. Усна практика: Telephoning. Business contacts.Реферування аутентичних текстів за фахом. Діалогічне мовлення за вказаними темами. Аудіюванняза темою модуля 7. Проектне дослідження за модулем 7.
Тема 4. Індивідуальне читання:
Аутентичні тексти за фахом.
Контрольна робота за матеріалами модулю 7.
У результаті вивчення модуля 7 студент повинен
знати: Неособові форми дієслова. Герундій. Past Perfect . Past Perfect Continuous

вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 7
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 7

7.1 UNIT 13. ACID DEPOSITION

"*The effects of acid rain on ecosystems are often more difficult to quantify".*
(President of USA Ronald Reagan)

I. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1. abnormal (adj) – ненормальний, невірний, анормальний
2. accumulation (n) – накопичення, скуплення
3. acidic (adj) – кислотний, кислий
4. convert (v) – перетворювати, переробляти
5. crayfish (n) – річний рак, лангуста
6. decline (n) – уклін, падіння, спад
7. deposit (v) – давати осад, відкладати
8. deposition (n) – осад
9. dissolve (v) – розчиняти, танути
10. elevation (n) – підняття, підвищення, висота (над рівнем моря)
11. encourage (v) – заохочувати, підтримувати
12. erode (v) – вивітрювати, розмивати, роз'їдати
13. fail (v) – терпіти невдачу, не мати успіху
14. gill (n) – яр (глибокий), гірський потік
15. gypsum (n) – гіпс
16. impair (v) – послабляти, зменшувати
17. limestone (n) – вапняк
18. long-term (adj) – довгостроковий
19. precipitation (n) – випадіння осаду
20. precursor (n) – попередник, предтеча, провісник

II. Vocabulary check.
Activity 1. Give English equivalents of the following.

1. кислотний дощ

2. хвойні дерева
3. чіткий, окреслений
4. харчовий ланцюг (мережа)
5. близькість екосистеми
6. мілководний
7. процес горіння
8. кислотні опади
9. види опадів
10. зменшення енергії

Activity 2. Give Ukrainian equivalents and chemical formulae for the following.

1. hydrogen peroxide
2. sulfuric acid
3. nitric acid
4. hydrocarbons
5. calcium carbonate
6. gypsum
7. limestone
8. oxides of nitrogen
9. hydroxyl ions

Activity 3. Match the following words with their explanations.

volcano	person or thing coming before as a sign of what is to follow
ozone	to harm or injury that causes the loss of value
extent	form of oxygen with a short smell
precursor	hill or mountain with opening (crater)
to cause	to get; take/have as a starting point, source of origin
to damage	(of qualities) high in degree
intense	to make neutral
to replace	worth having
to neutralize	degree, partly, somewhat
to derive	to be a reason of smth.
desirable	to put back in its place

III. Grammar review

Герундій

Герундій - неособова форма дієслова, яка поєднує властивості дієслова та іменника. Усі форми герундія збігаються з формами дієприкметника. У реченні герундій вживається у функціях:

1. підмета і перекладається або іменником, або інфінітивом.

Walking is useful. - Ходьба пішки корисна. Ходити пішки корисно.

2. частини присудка і перекладається інфінітивом, або іменником.

Our aim is to study English. - Наша мета – вивчити (вивчення) англійську мову.

3. додаток , перекладається іменником або інфінітивом.

She likes singing. - Вона любить спів (співати).

4. означення – перекладається іменником, прикметником , або інфінітивом.

Its boiling point is very low -Його точка кипіння дуже низька.

5. обставини – перекладається іменником, дієприкметником , або інфінітивом

He left the room without saying good-bye. - Він вийшов з кімнати, не попрощавшись.

Частіше за все герундій вживають після дієслів, прикметників та дієприкметників, що потребують спеціальних прийменників. До тих, що використовують такі прийменники, належать :

to be disappointed at	бути розчарованим у чомусь
to be surpised at	бути здивованим чимось
to be responsible for	бути відповідальним за
to prevent from	перешкоджати, заважати
to result in	призводити у результаті до чогось
to succeed in	удаватися
to be engaged in	займатися чимось
to be interested in	бути зацікавленим у чомусь
to accuse of	звинувачувати у чомусь
to approve of	схвалювати щось
to hear of	чути про щось
to think of	думати про щось
to be afraid of	боятися чогось
to be capable of	бути спроможним на
to be fond of	любити щось
to depend on(upon)	залежати від
to insist on	наполягати на
to object to	заперечувати проти
to get used to	звикати до

Герундіальний зворот (Gerund Construction)

Перекладається підрядними реченнями, що вводяться сполучниками *що, щоб*. Іменник чи займенник, що стоїть перед герундієм, стає в українській мові підметом підрядного речення, а герундій – присудком.
His (my friend's) taking part in this work helped me greatly.-Те, що він (мій друг) брав участь у цій роботі, дуже допомогло мені.
I heard of our head engineer's having been sent abroad. - Я чув(про те), що нашого головного інженера відправили за кордон.

Exercise 1.
Match the sentence halves.

I'm looking forward to	signing anything like that
I don't remember	talking for half an hour
He's decided to give up	increasing our debt-equity ratio
Borrowing any more money would involve	smoking cigars for health reasons
She loves the sound of her voice and carries on	seeing you in Milan soon

Exercise 2.
Using the word in brackets, complete the second sentence so that it has a similar meaning to the first.
1. Travelling doesn't bother me as long as there are no delays (mind)
I don't mind……
2. In my job I have to meet many people (involve)
My job_____
3. I certainly did not pass on any trade secrets (deny)
I firmly _____
4. There's a danger we will lose business to our competitors. (risk)
We_____
5. He was late so I didn't see him. (miss)
He was late so_____
Exercise 3.
Put the appropriate preposition before the gerund in these sentences.

1. Never turn on the current,…making sure that the fuse is in place.
2. He was taken to hospital…being knocked down.
3. The idea came to me suddenly…lying awake last night.
4. You should consult his secretary… disturbing him.
5. Think what you want to say…putting pen to paper.
6. You have to get permission… taking the day off.
7. They had a nasty accident … returning home last night.
8. They all went home…hearing his speech.
9. He found his spectacles …looking for something different.
10. He suddenly felt faint …having breakfast and had to leave the table.

IV Pre-text discussion

Activity 1. Do you know that:

- Scientists and engineers have developed ways to reduce the acidity of rains.
- Acid rain is a term for rain, snow, sleet and wet precipitation.
- Acid rain harms lakes, rivers, aquatic life and so on.
- Acid rain damages buildings, bridges, statues, forests, soils.
- Acid rain is a worldwide problem.
- The effects of acid rain on aquatic ecosystems are much more clear up.
- About 14000 lakes in Canada have been seriously altered by becoming acid.
- There is suggested a 50 % reduction of sulphur dioxide by Canada.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3. Give your opinion on the following

1. The sulfur dioxide contributes greatly to acid formation.
2. Acids result from natural causes, such as vegetation, volcanoes and lightning.
3. Acid rain is a worldwide problem.

V. Read, translate text 13 A.

Text 13 A.

"Acid deposition"

Acid deposition is the accumulation of potential acid-forming particles on a surface. Acids result from natural causes, such as vegetation, volcanoes, and lightning; and from human activities, such as coal burning and use of the internal combustion engine. These combustion processes produce sulfur dioxide ($S0_2$) and oxides of nitrogen (NO_x). Oxidizing agents, such as ozone, hydroxyl ions, or hydrogen peroxide, along with water, are necessary to convert the sulfur dioxide or nitrogen oxides to sulfuric or nitric acid. Various reactive hydrocarbons (HC) encourage the production of oxidizing agents. The acid-forming reactants are classified as wet or dry. Wet reactions occur in the atmosphere and come to earth as some form of precipitation: acid rain, acid snow, or acid dew. Dry deposition occurs with the settling of the precursors of the acid on a surface. An acid does not actually form until these materials mix with water. Even though the acids are formed and deposited in several different ways, all of these processes usually are referred to as **acid rain.**

Acid rain is a term for rain, snow, sleet, or other wet precipitation that is polluted by such acids as sulfuric acid and nitric acid. Acid rain harms thousands of lakes, rivers and streams worldwide, killing fish and other aquatic life. Scientists believe it also damages buildings, bridges, statues, forests, and soil

Acid rain is a worldwide problem. Reports of high acid-rain damage have come from Canada, England, Germany, France, Scandinavia, and the United States.

Rain is normally slightly acidic, with a pH between 5.6 and 5.7 due to atmospheric carbon dioxide that dissolves to produce carbonic acid. But acid rains sometimes have a concentration of acid a thousand times higher than normal. In 1969, New Hampshire had a rain with a pH of 2.1. In 1974, Scotland had a rain with a pH of 2.4. The average rain in much of the northeastern part of the United States and adjoining parts of Ontario has a pH between 4.0 and 4.5.

Acid rain can cause damage in several ways. Buildings and monuments are often made from materials that contain limestone (calcium carbonate, $CaC0_3$), because limestone is relatively soft and easy to work. Sulfuric acid (H_2S0_4), a major component of acid rain, converts limestone to gypsum ($CaS0_4$), which is more soluble and is eroded over many years of contact with acid rain.

Damage Due to Acid Deposition. Sulfuric acid (H_2SO_4), which is a major component of acid deposition, reacts with limestone ($CaCO_3$) to form gypsum ($CaSO_4$). Since gypsum is water soluble, it washes away with rain. The damage to this monument is the result of such acid reacting with the stone.

Metal surfaces can also be attacked by acid rain.

The effects of acid rain on ecosystems are often more difficult to quantify. Intense sulfur dioxide pollution around smelters is known to cause the death of many kinds of trees and other vegetation. But this is an extreme case and may not be directly comparable to less intense acid rain. However, in many parts of the world, acid rain is suspected of causing the death of many forests and reducing the vigor and rate of growth of others.

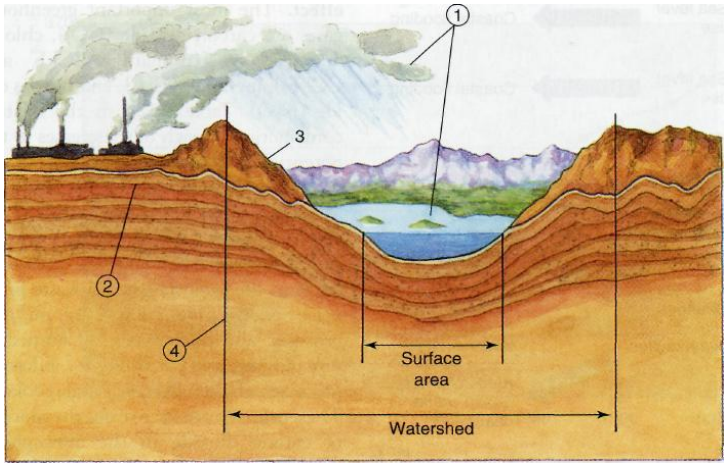
Forest Decline. Many forests at high elevations in northeastern North America have shown significant decline, and dead trees are common

In Central Europe, many forests have declined significantly, resulting in the death of about 6 million hectares of trees. Northeastern North America has also seen significant tree death and reduction in vigor, particularly at higher elevations. Some areas have had 50 percent mortality of red spruce trees.

A clear link between the decline of the forests and acid rain is difficult to establish, but several hypotheses have been formulated. Molecules like sulfur dioxide and ozone are known sources of air pollution and cause direct damage to plants. The sulfur dioxide also contributes to acid formation. As soil becomes acidic, aluminum is released from binding sites and may interfere with the plant roots' ability to absorb nutrients. A recent long-term study in New Hampshire strongly suggests that the many years of acid precipitation have reduced the amount of calcium in the soil, which is needed by plants for growth. Because there are no easy ways to replace the calcium even if acid rain were to stop, it would still take many years for the forests to return to health. Reduction in the pH of the soil may also change the kind of bacteria in the soil and reduce the availability of nutrients for plants.

The effects of acid rain on aquatic ecosystems are much more clear-cut. In several experiments, lakes were purposely converted to acid lakes and the changes in the ecosystems recorded. The experiments showed that, as lakes become more acidic, there is a progressive loss of many kinds of organisms. The food chain becomes less complicated, many organisms fail to reproduce, and many others die. Most healthy lakes have a pH above 6. At a pH of 5.5, many desirable species of fish have been eliminated; at a pH of 5, only a few starving fish may be found, and none are reproducing. Lakes with a pH of 4-5 are nearly sterile.

The extent to which lakes have been acidified is great. About 14,000 lakes in Canada and 11,000 in the United States have been seriously altered by becoming acidic. Many lakes in Scandinavia are similarly affected. The extent to which acid deposition affects an ecosystem depends on the nature of the bedrock in the area and the ecosystem's proximity to acid-forming pollution sources.



Factors That Contribute to Acid Rain Damage In an aquatic ecosystem, the following factors increase the risk of damage from acid deposition: (1) a lake is located downwind from a major source of air pollution; (2) the area around the lake is hard, insoluble bedrock covered with a layer of thin infertile soil; (3) the soil has a low buffering capacity; and (4) there is also a low watershed to lake surface area ratio.

Parent material derived from igneous rock is not capable of buffering the effects of acid deposition, while soils derived from sedimentary rocks such as limestone release bases that neutralize the effects of acids. Because of this, eastern Canada and the U.S. Northeast are particularly susceptible to acid rain. These areas have high amounts of granite rock and are downwind from the major air-pollution sources of North America. Scandinavian countries have a similar geology and receive pollution from industrial areas in the United Kingdom and Europe. Thousands of kilometers of streams and up to 200,000 lakes in eastern Canada and the northeastern United States are estimated to be in danger of becoming acidified because of their location and geology.

VI. Comprehension check
Activity 1. Do the false/true activity

1. The effects of acid rain on aquatic ecosystems are not investigated at all.
2. Streams in England and Canada are in danger of becoming acidified.
3. Most healthy lakes have a pH above 6.
4. At pH of 5.5 many species of fish have been eliminated.
5. Lakes with a pH of 4.5 are considered to be sterile.
6. As soil becomes acidic aluminium is released from binding sites.
7. In many forests at high elevations in North America dead trees are common.
8. Molecules from natural sources react to produce chemicals being the source of acid depositions.
9. The low pH of the water in which fish live doesn't cause the abnormal bone development.
10. The low pH results in the death of fish.

Activity 2. Look through text 13 carefully. Then complete the following to make suitable sentences according to the meaning of the text.

1. Acid rain is a _____ for rain, snow, sleet.
2. Acid rain harms thousands of _____.
3. Acid rain _____ and other aquatic life.
4. Acid rain is a worldwide _____.
5. Rain is normally slightly _____ with a _____ between 5.6 and 5.7.

6. Acid rains sometimes have a concentration of acid a _____.
7. Acid rain can cause _____.
8. The damage to this monument is the result of such acid reaction _____.
9. Acid deposition is the accumulation of _____.
10. The acid-forming reactants are classified as _____.

VII. Discussion

Activity 1. Define the logical parts of text 13 entitling each of them.

Activity 2. Work in pairs. Ask and answer the questions on text 13.

Activity 3. Translate in writing and reproduce.

- Ти знаєш класифікацію кислотних дощів?
- Так, я читала про кислотні дощі і, якщо я не помиляюсь, вони розподіляються на вологі та сухі.
- Коли трапляються вологі реакції?
- Вологі реакції трапляються в атмосфері і потрапляють на землю у вигляді опадів.
- Що ти маєш на увазі „у вигляді опадів”? Хіба це не тільки дощ?
- Ні, звичайно! Це – кислотні дощі, кислотний сніг, кислотна роса.
- А, зрозуміло!

***

- Чи ти знаєш, що кислотний дощ це загальна проблема.
- Так, я знаю, що кислотні дощі спричиняють велику шкоду.
- Ми маємо багато повідомлень з Франції, Скандинавії, Канади, Англії, США про величезну шкоду кислотних дощів для пам′ятників, споруд та здоров’я людини.
- Мене дуже цікавить ця проблема, я хочу дослідити її в своїй дипломній роботі і далі в дисертації (thesis)

***

- Яким чином можуть впливати кислотні дощі?
- Кислотний дощ може спричиняти шкоду кількома шляхами.
- А саме?
- Споруди та пам′ятники часто роблять з матеріалів, які містять вапняк, а саме карбонат кальцію, тому, що цей матеріал м’який і з ним легко працювати.
- Ну то й що?
- Сірчана кислота, основний компонент кислотного дощу, перетворює вапняк на гіпс.
- Зрозуміло.

Activity 4. Make up your own dialogues on the theme “Acid deposition”.

VIII. Skim text 13B and get ready to speak about smog and its causes.

Smog doesn't respect international borders, neither do the ill effects.

Greg Flynn

Text 13 B.

SMOG

Smog is a type of air pollution; the word "smog" was coined in the mid 20th century as a portmanteau of the words *smoke* and *fog* to refer to smoky fog.The word was then intended to refer to what was sometimes known as pea soup fog, a familiar and serious problem in London from the 19th century to the mid 20th century. This kind of smog is caused by the burning of large amounts of coal within a city; this smog contains soot particulates from smoke, sulfur dioxide and other components.

Claude Monet made several trips to London between 1899 and 1901, during which he painted views of the Thames and Houses of Parliament which show the sun struggling to shine through London's smog-laden atmosphere.

The London "pea-soupers" earned the capital the nickname of "The Smoke". Similarly, Edinburgh was known as "Auld Reekie". The smogs feature in many London novels as a motif indicating hidden danger or a mystery.

In 1956 the Clean Air Act started legally enforcing smokeless zones in the capital. There were areas where no soft coal was allowed to be burned in homes or in businesses, only coke, which produces no smoke. Because of the smokeless zones, reduced levels of sooty particulates made the intense and persistent London smog a thing of the past.

It was after this that the great clean-up of London began. One by one, historical buildings which, during the previous two centuries had gradually completely blackened externally, had their stone facades cleaned and restored to their original appearance. Victorian buildings whose appearance changed dramatically after cleaning included the British Museum of Natural History. A more recent example was the Palace of Westminster, which was cleaned in the 1980s. Smog caused by traffic pollution, however, does still occur in modern London.

Modern smog, as found for example in Los Angeles, is a type of air pollution derived from vehicular emission from internal combustion engines and industrial fumes that react in the atmosphere with sunlight to form secondary pollutants that also combine with the primary emissions to form photochemical smog.

Photochemical smog was first described in the 1950s. It is the chemical reaction of sunlight, nitrogen oxides and volatile organic compounds in the atmosphere, which leaves airborne particles and ground-level ozone. It is present in all modern cities,

but it is more common in cities with sunny, warm, dry climates and a large number of motor vehicles. Because it travels with the wind, it can affect sparsely populated areas as well.

Smog is a serious problem in many cities and continues to harm human health.Ground-level ozone, sulfur dioxide, nitrogen dioxide and carbon monoxide are especially harmful for senior citizens, children, and people with heart and lung conditions. Smog can form in almost any climate where industries or cities release large amounts of air pollution, such as smoke or gases. However, it is worse during periods of warmer, sunnier weather when the upper air is warm enough to inhibit vertical circulation. It is especially prevalent in geologic basins encircled by hills or mountains. It often stays for an extended period of time over densely populated cities or urban areas, and can build up to dangerous levels.

Mexico city is an example of the city worst affected by smog.

Due to its location in a highland "bowl", cold air sinks down onto the urban area of Mexico City, trapping industrial and vehicle pollution underneath, and turning it into the most infamously smog-plagued city of Latin America. Within one generation, the city has changed from being known for some of the cleanest air of the world into one with some of the worst pollution, with pollutants like nitrogen dioxide being double or even triple international standards.

Similar to Mexico City, the air pollution of Santiago valley located between the Andes and Chilean Coast Range turning it into the most infamously smog-plagued city of South America. Other agravant of the situation resides in its high latittude (31 degrees South) and dry weather at most part of the year.

Smog is a regular problem in Southeast Asia caused by land and forest fires in Indonesia, especially Sumatra and Kalimantan, although the term haze is preferred in describing the problem. Farmers and plantation owners are usually responsible for the fires, which they use to clear tracts of land for further plantings.

An erupting volcano can also emit high levels of sulphur dioxide along with a large quantity of particulate matter; two key components to the creation of smog.

TEST/REVIEW

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Many pipelines … by the federal government by the end of 1950th.

A) were sold	C) will be sold
B) was sold	D) had been sold

2. Passengers … to pay for the rapid travel over long distances.

A) is eager	C) was eager
B) will be eager	D) will

3. Scientists and engineers … developing the ways to reduce the acidity of rains since the beginning of this century.

A) are	C) have been
B) has	D) will have

4. Muscle power … with machines in the industrial countries.

A) was replaced	C) were replaced
B) was being replaced	D) replaces

5. He … to get married at 5 p.m.

A) is going	C) are going
B) will be going	D) would be going

Task II. Total 20

Give English or Ukrainian equivalents of the following.

1. Widespread use
2. Надлишкова кількість енергії
3. Ефективні енергетичні процеси
4. Метрична тонна
5. GDP
6. Мікроорганізми
7. Біомаса
8. Residential purpose
9. Природний газ
10. Fossil remains
11. На душу населення
12. Кислотний дощ
13. Кислотні опади
14. Види опадів
15. Походити за характером
16. Що він за людина?
17. High population density
18. Менш розвинуті країни
19. Мілководний
20. сприяти

Task III. Total 10

Use the correct verb form to open the brackets.

1. OPEC (to arrange) its meeting of the member countries by the end of the current year.
2. In Canada 40 percent of residential energy (to be used) for heating.

3. Energy (to provide) by the Sun.
4. Sulfur dioxide (to contribute) greatly to acid formation.
5. Acid rain (to be a term) for rain, snow, sleet, and wet precipitation.

Task IV. Total 10
Compose questions with the question words in brackets.

1. The Sun provides energy. (Subject)
2. Early civilizations used human muscles, animal muscles and fire as sources of energy. (What?)
3. Air travel is relatively expensive in terms of energy. (Subject)
4. Private automobiles in North America consume over 15 percent of the world's oil production. (Object)
5. Dry deposition occurs with the settling of the precursors of the acid on surface. (Where?)

Task V. Total 10
Insert prepositions where it is necessary.

1. He entered … the conference hall in time.
2. Reports … high acid rain damage have come from Canada and England.
3. Energy is produced … the Sun.
4. Europe was rural … the Industrial revolution.
5. He is a decent person. He can be relied …

Task VI. Total 10
Translate into English.

1. Проблема кислотних дощів досліджується протягом десятиріч.
2. Кислотні дощі по-різному спричиняють шкоду.
3. Більше ніж 2 млрд. банок напоїв Пепсі-Коли було випущено в США в 1963р.
4. Більша частина алюмінію видобувається в тропічних країнах.
5. Експедиція була дуже вдалою, бо вони готувалися до неї цілий рік.

Task VII. Total 10
Compose sentences with the following words and translate them.

1. Lifestyle, nuclear, will, the, alter, our, new, sources, of, energy.
2. I, am, afraid, number, you've, wrong, got.
3. PH, fish, of, the, in, death, the, low, results.
4. Problem, rain, a, worldwide, acid, is.
5. Rain, soil, statues, damages, and, acid, buildings.

Task VIII. Total 10

Give a smart translation:

A clear link between the decline of the forests and acid rain is difficult to establish, but several hypotheses have been formulated. Molecules like sulfur dioxide and ozone are known sources of air pollution and cause direct damage to plants. The sulfur dioxide also contributes to acid formation. As soil becomes acidic, aluminum is released from binding sites and may interfere with the plant roots' ability to absorb nutrients. A recent long-term study in New Hampshire strongly suggests that the many years of acid precipitation have reduced the amount of calcium in the soil, which is needed by plants for growth. Because there are no easy ways to replace the calcium even if acid rain were to stop, it would still take many years for the forests to return to health. Reduction in the pH of the soil may also change the kind of bacteria in the soil and reduce the availability of nutrients for plants.

Task IX. Total 10
Give your opinion on the following (not less than 15 sentences):
Sulfur dioxide contributes greatly to acid formation.

7.2.UNIT 14. ACID RAIN

I. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1. densely (adv) – густо
2. encircle (v) – оточувати, оперізувати
3. enforce (v) – приводити в життя
4. erupt (v) – викидати
5. prevalent (adj) – розповсюджений, поширений
6. proximity (adj) – близькість
7. quantify (v) – визначати кількість
8. reactant (n) – той, що викликає реакцію
9. refer (v) – відносити (ся)
10. smokeless (adj) – бездимний
11. smog (n) – смог
12. susceptible (adj) – вразливий, сприятливий, чутливий
13. suspect (v) – підозрювати
14. sterile (adj) – безплідний, стерильний, безрезультатний
15. trap (n) – пастка
16. valley (n) – долина
17. vegetation (n) – рослинність
18. vigor (n) – сила, енергія, законність, дійсність

19.volatile (adj) – летючий
20.attitude –ставлення

II. Vocabulary check.

Activity 1. Give English equivalents of the following.

1. кислотні опади
2. зменшення двоокису сірки
3. зменшення викидів
4. двигун внутрішнього згоряння
5. вторинні забруднювачі
6. наземний озоновий шар
7. небезпека
8. забруднення річок і озер
9. анаеробні бактерії
10. пестициди і гербіциди

Activity 2. Give Ukrainian equivalents of the following.

1. portmanteau of the words
2. smoky fog
3. within a city
4. soot particulates
5. sulfur dioxide
6. smokeless zones
7. intense and persistent
8. vehicular emission
9. photochemical smog
10. human health

III. Grammar review

Утворення та вживання Past Perfect

Past Perfect утворюється з допоміжного дієслова to have у Past Simple - had і Past Participle основного дієслова.

Past Perfect вживається для вираження минулої дії, яка вже відбулася до певного моменту або іншої дії в минулому. Цей момент позначається такими обставинними словами: by	She had finished her work by 5 o'clock. Вона закінчила свою роботу до 5 години. I had not done the exercise when my father came in.

Monday - до понеділка; by 3 o'clock - до 3 години; by that time- до того часу; by the first of May -до першого травня , for, since, already, after, before, just, never, yet	Я ще не виконав вправу, коли увійшов мій тато.

Past Perfect

I **had worked.**	**Had I worked?**
You/ we/ they **had worked.**	**Had** you/we/they **worked?**
He/she/it **had worked.**	**Had** he/she/it **worked?**

I had **not worked.**
You/we/they **had not worked.**
He/she/it **had not worked.**

Past Perfect Continuous

I **had been working**	**Had** I **been working?**
You/ we/ they **had been working**	**Had** you/we/they **been working?**
He/she/it **had been working**	**Had** he/she/it **been working?**

I **had not been working**
You/we/they **had not been working**
He/she/it **had not been working**

Вживається

1. Для вираження дії, яка продовжувалася на протязі певного часу до якогось моменту у минулому.

She *had been saving* for a whole year before she bought her ticket to Australia.
He *had been waiting* for an hour before she arrived.

2. Для вираження дії, яка продовжувалась у минулому і яка мала наслідки у минулому.

He was tired. He *had been cleaning* the house all morning.

Exercise 1.

1. Fill in the Past Perfect or Past Perfect Continuous:

1. Mary was late for work. Her boss was very surprised. She never …… (be/late) before.
2. He was cold. He …… (swim) in the lake.
3. He couldn't pay the bill. He …… (lose) his wallet.
4. He bought a car after he …… (save) enough money.
5. She signed the letter after she …… (write) it.

Exercise 2.
Complete these sentences using the verbs in brackets in Past Perfect:

1. My best friend, Kevin, was no longer there. He …… (go) away.
2. The local cinema was no longer open. It …… (close) down.
3. I didn't recognise Mrs. Johnson. She …… (change) a lot.
4. Mr. and Mrs. Davis were in an aeroplane. They were very nervous as the plane took off because they never …… (fly) before.
5. Jane played tennis yesterday – at least she tried to play tennis. She wasn't very good at it because she never …… (play) before.

Exercise 3.
Join the sentences using the words in brackets:

1. She cleaned the house. Then, she watched TV. (after)
2. I found a solution to my problem. Then, I felt happier. (when)
3. The boys finished their homework. Then, they went out to play. (before)
4. He locked the door. Then, the phone rang. (after)
5. She washed the dishes. Then, her husband arrived. (by the time)

Exercise 4.
Put the verbs in brackets into the correct form of the Past Perfect Continuous:

1. Sophie …… (paint) the walls all day before she finished them.
2. Tom …… (look) for a job for six months when he found one.
3. Stan …… (work) as a postman for forty years when he retired.
4. Tom was watching television. He was feeling very tired. He …… (study) hard all day.
5. When I arrived, Ann was waiting for me. She was rather annoyed with me because I was late and she …… (wait) for a very long time.

Exercise 5.
Put the verbs in brackets into the Past Perfect or the Past Perfect Continuous:

Yesterday was a bad day for Andrew. He 1) …… (not/sleep) well because there was a terrible storm at night. After he 2)…… (have) a shower, he made breakfast. After he 3)…… (eat), he got into his car and drove to work. He only 4)…….. (drive) for five minutes when he remembered that he 5)…… (leave) his briefcase at home. He turned the car around and went home again. Then, he realised that he 6) …… (lock) himself out. The keys were still inside the house! Andrew was already late for work, so he decided to leave the briefcase and go to work. When he arrived, his secretary told him that his boss 7) …… (try) to call him at home.

Exercise 6.
Translate into English

1. Коли ми добрались додому, пішов сильний дощ.
2. Цей міст був уже збудований, коли почали будувати метро?
3. Багато видів рослин і тварин було знищено раніше, ніж люди почали задумуватись над майбутнім планети.
4. Поки ми стояли пів години у заторі на дорозі, ми спізнилися на спектакль.
5. До кінця другого дня у таборі він вже познайомився з багатьма дітьми.
6. Кімната була порожня – всі кудись пішли.
7. Вона економила гроші цілий рік, перш ніж змогла купити квиток до Австралії**.**
8. Експедиція була дуже вдалою, бо вони готувались до неї майже цілий рік.
9. Після того, як люди вирубали ліс у Картапах, почалися повені та зсуви ґрунту.
10. Після того як вони закінчили досліди, вони змогли відпочити .

IV Pre-text discussion

Activity 1. Do you know that:

- Acid deposition is the accumulation of potential acid-forming particles on a surface.
- Acid rain is a term for rain, sleet and other wet precipitation.
- Smog is a type of air pollution.
- The word “smog” was coined in the middle 20th century.
- Smog is caused by the burning of large amount of coal within a city.
- The Clean Air Act started legally enforcing smokeless zones in London.

Activity 2. Make up dialogues of your own, discussing the information given in the part “Do you know that”.

V. Read, translate text 14A.

Text 14 A.

Acid Rain: Canada Versus the United States

"U.S. foot-dragging and interference in the development of scientific information has reached frustrating proportions." These words, spoken by the Honorable John Roberts, Canadian Minister of the Environment, sum up the confrontation between Canada and the United States regarding the question of acid deposition. Canadians have long contended that much of the acid deposition in their country originates in the United States. They are very concerned because 2.5 million square kilometers of Canada are highly susceptible to acid deposition.

With the signing of the Memorandum of Intent on Transboundary Air Pollution in 1980, the United States and Canada took the first step to cooperatively reduce the amount of acid deposition. The memorandum created scientific groups to study the problems of air pollution. After two years of study, there was still no accord. The Canadians accused the Reagan administration of delaying the studies, and the United States accused the Canadians of acting too rapidly.

In 1982, Canada suggested a mutual 50 percent reduction of sulfur dioxide by 1990. Citing a lack of research, the United States did not agree with the plan. This prompted the Environment Minister to state, "Always the constant refrain rings out from the administration that nothing is proven, and that an indefinite amount of further study is needed, not prompt action. Well, we can't wait. Our lakes and forests are literally dying."

In fact, the dispute reached such proportions that in 1983 the U.S. Department of Justice ruled that a Canadian-produced film on acid rain had to be labeled as political propaganda before it could be shown in the United States. The U.S. Department of Justice also required that the names of U.S. groups viewing the film be reported to the Justice Department. This attitude prompted the Canadian Minister of the Environment to observe, "It sounds like something you would expect from the Soviet Union, not the United States."

In his 1984 State of the Union Address, President Reagan affirmed that the United States would take no direct action regarding the question of acid deposition other than to continue to research the problem. Later that year, the Canadians announced a goal of reducing acid deposition by 50 percent and trusted that the United States would join them. However, the possibility seemed remote, for in May 1984, the House subcommittee voted against a bill to reduce the emissions of sulfur dioxide by 10 million metric tons by 1993. This killed any U.S. action regarding reduced acid deposition for 1984-

During the Bush administration, there was a softening of attitudes toward transboundary air pollution. The 1990 Clean Air Act set in place a set of rules that is significantly lowering the amount of acid precipitation in the United States and is resulting in less acid rain crossing the border into Canada. As evidence of this change in attitude, President Bush signed an agreement in 1991 to cooperate in reducing transboundary air pollution.

Summary writing.

Activity 1. Rearrange and write the following sentences in a paragraph that summarizes the text.

1. During the Bush administration there was a softening of attitudes toward transboundary air pollution.
2. President Bush signed an agreement in 1991 to cooperate in reducing transboundary air pollution.
3. In 1982 Canada suggested a mutual 50 percent repuction of CO2 by 1990.

4. There was a confrontation between Canada and United States regarding the question of acid deposition.
5. The Canadians accused the Reagan administration of delaying the studies of the problem.
6. Lakes and forests are literally dying in Canada.
7. Canada produced a film on acid rain.
8. The house subcommittee voted against a bill to reduce the emission of sulfur dioxide by 10 million metric tons by 1993.
9. This decision killed any U.S. action regarding reduced acid deposition for 1984.
10. In 1980 the United States and Canada took the first step to cooperatively reduce the amount of acid deposition.

Activity 2. Translate into English using the dictionary.

З розвитком промисловості річки й озера стали все більше забруднюватися викидами недостатньо очищених стічних вод, промисловими відходами і термічними водами гідроелектростанцій.

У більш пізній період забруднення річок і озер явно зросло внаслідок змивання добрив, пестицидів і гербіцидів з сільськогосподарських угідь, а також кислотних дощів.Забруднення промисловими відходами, сільськогосподарськими добривами і пестицидами стало реальною загрозою всій гідрографічній системі Землі та існуванню людини.

Останнім часом великої шкоди завдають природним водам кислотні дощі. Чим частіше випадають кислотні дощі й чим більшу концентрацію кислоти вони містять, тим швидше зменшується кількість і видовий склад живих істот, у водоймах гинуть ікринки земноводних, равлики, прісноводні креветки, вимирають бактерії, а отруєні листки і стебла нагромаджуються на дні, зникає планктон. З донних залишків починається вилуговування отруйних металів: алюмінію, ртуті, свинцю , кадмію, олова, берилію та ін. Внаслідок цього багато риб гине. Вода здається чистою, оскільки в ній відсутні майже всі мікроорганізми. Наявні лише анаеробні бактерії, котрі виділяють вуглекислий газ, метан, сірководень.

VII. Discussion
Activity 1. Define the logical parts of text 14A entitling each of them.
Activity 2. Work in pairs. Ask and answer the questions on text 14 A.
Activity 3. Make up your own dialogues on the theme “Acid Rain: Canada Versus the U.S.”

VIII. Skim text 14B and get ready to speak about the text.

Text 14 B.

Ocean acidification

Ocean acidification is the name given to the ongoing decrease in the pH of the Earth's oceans, caused by the uptake of anthropogenic carbon dioxide (CO_2) from the atmosphere. About a quarter of the carbon dioxide in the atmosphere goes into the oceans, where it forms carbonic acid. As the amount of carbon has risen in the atmosphere there has been a corresponding rise of carbon going into the ocean. Between 1751 and 1994 surface ocean pH is estimated to have decreased from approximately 8.25 to 8.14 representing an increase of almost 30% in "acidity". This ongoing acidification of the oceans poses a threat to the food chains connected with the oceans.

Although the largest changes are expected in the future, some scientists found that large quantities of water undersaturated in aragonite are already upwelling close to the Pacific continental shelf area of North America. Continental shelves play an important role in marine ecosystems since most marine organisms live or are spawned there.

Current rates of ocean acidification have been compared with the greenhouse event at the Paleocene-Eocene boundary (about 55 million years ago) when surface ocean temperatures rose by 5–6 degrees Celsius. No catastrophe was seen in surface ecosystems, yet bottom-dwelling organisms in the deep ocean experienced a major extinction. The current acidification is on a path to reach levels higher than any seen in the last 65 million years, and the rate of increase is about ten times the rate that preceded the Paleocene-Eocene mass extinction. The current and projected acidification has been described as an almost unprecedented geological event.

Changes in ocean chemistry can have extensive direct and indirect effects on organisms and their habitats. One of the most important repercussions of increasing ocean acidity relates to the production of shells and plates out of calcium carbonate ($CaCO_3$). This process is called calcification and is important to the biology and survival of a wide range of marine organisms. Calcification involves the precipitation of dissolved ions into solid $CaCO_3$ structures, such as coccoliths. After they are formed, such structures are vulnerable to dissolution unless the surrounding seawater contains saturating concentrations of carbonate ions.

Although the natural absorption of CO_2 by the world's oceans helps mitigate the climatic effects of anthropogenic emissions of CO_2, it is believed that the resulting decrease in pH will have negative consequences, primarily for oceanic calcifying organisms. These span the food chain from autotrophs to heterotrophs and include organisms such as coccolithophores, corals, foraminifera, echinoderms, crustaceans and molluscs. Under normal conditions, calcite and aragonite are stable in surface waters since the carbonate ion is at supersaturating concentrations. However, as ocean pH falls, so does the concentration of this ion, and when carbonate becomes undersaturated, structures made of calcium carbonate are vulnerable to dissolution.

Leaving aside direct biological effects, it is expected that ocean acidification in the future will lead to a significant decrease in the burial of carbonate sediments for several centuries, and even the dissolution of existing carbonate sediments. This

will cause an elevation of ocean alkalinity, leading to the enhancement of the ocean as a reservoir for CO2 with moderate (and potentially beneficial) implications for climate change as more CO2 leaves the atmosphere for the ocean.

I. Read the text. For statements (1-10) choose "True" if the statement is true according to the text, "False" if the statement is false:

1. Ocean acidification is the name given to the ongoing decrease in the pH.
2. Continental shelves do not play any role in marine ecosystems.
3. About a quarter of the carbon dioxide in the atmosphere goes into the oceans.
4. Ongoing acidification of the oceans poses a threat to the food chains connected with the oceans.
5. Current rates of ocean acidification have been compared with the greenhouse event.
6. Changes in ocean chemistry cannot have extensive direct and indirect effects on organisms and their habitats.
7. The current acidification is higher than any seen in the last 65 million years.
8. It is believed that the decrease in pH will have negative consequences.
9. Calcite and aragonite are stable in surface waters.
10. An elevation of ocean alkalinity will lead to the enhancement of the ocean as a reservoir for CO2.

IX. Long-term project work.
Prepare projects on the following topics.

1. Ukraine against acid deposition.
2. Influence of acid rains and acid snow on humans' health.
3. Damage to historical buildings and monuments caused by acid deposition

a) in different countries of the world; b) in Ukraine.

X. Spoken English (Every day English)

1. Remember!

Загальні характеристики телефонних розмов майже такі ж, що і при бесіді обличчям до обличчя. Однак, є ряд відмінностей, які залежать від середи комунікації та обмежень, які вона накладає.

Якщо під час бесіди ви бачите один одного, ви можете використовувати жести, міміку, які допомагають спілкуванню та взаєморозумінню, чого немає при розмові по телефону. Розмови по телефону менш емоційні та прості.

2. Speech patterns.

Speaking.

call	телефонний виклик, дзвінок

to call up	зателефонувати
to make a call	дзвонити по телефону
to phone	дзвонити по телефону
to ring smb.	дзвонити по телефону
to buss smb. (Am.)	дзвонити по телефону
receiver	слухавка
to lift the receiver	підняти слухавку
to pick up the receiver	підняти слухавку
to replace the receiver	покласти слухавку
to hang up	покласти слухавку
to ring off	покласти слухавку
to dail	набрати номер
to listen for dialing tone	чекати відповіді
The line is free	Номер не зайнятий
The line is engaged = The line is busy	Номер зайнятий
coin-box telephone = telephone booth = box phone	телефон-автомат
extention	додатковий номер
switchboard	комутатор
switchboard operator	телефоністка
trunk-call = long distance call	міжміський телефонний виклик
subscriber	абонент
Subscriber Trunk Dialling (S.T.D.)	МАТС
telephone diarection = telephone book	телефонний довідник
to clear = to disconnect	роз’єднувати
caller	той, хто дзвонить
to connect = to put a call through	з’єднувати
to hold on	не класти слухавку, чекати
to make a call through the operator	подзвонити через телефоністку
ADC = “advise duration and charge”	повідомте тривалість та вартість розмови
personal call = person-to-person call	розмова по телефону, замовлена на певну людину
station-to station call	розмова по телефону, замовлена на номер абонента
transferred-charge call = collect call	розмова по телефону, замовлена за рахунок того, кого викликають
charge	платня (за телефонну розмову)
alphabetic directory	алфавітний довідник
fire department = fire brigade	пожежна станція
ambulance	швидка допомога

telephone repair service	бюро ремонту телефонів

Speaking. To put through. To dial. To be available. Wrong number. To be engaged. To make a call. To call back.

Can (could, may) I speak to Mr. Ivanov?	Я можу поговорити з паном Івановим?
Can (could) you put me through to Mr. Sedov?	З'єднайте мене, будь ласка, з паном Сєдовим.
Can (could) you take a message?	Прийміть, будь ласка, повідомлення.
Can (could, may) I use your phone, please?	Можна скористатися вашим телефоном?
Can (could) you speak up, please?	Говоріть, будь ласка, голосніше.
Can (could) you hold on?	Почекайте, будь ласка.
Can (could) you hear me well?	Ви мене добре чуєте?
Can (could, may) I make a long-distance call?	Я хотів би зробити міжміський дзвінок.
Is Mr. Surikov available?	Можна пана Сурикова?
Is that Mr. Brown?	Це пан Браун?
Are you on the telephone?	У вас є телефон?
Am I speaking to Frank Moris?	Я розмовляю з паном Френком Моррісом?
Are you there?	Ви мене чуєте?
Who is calling, please?	Хто телефонує?
What city, please?	Яке місто?
What number, please?	Який номер?
What is the charge for the call?	Яка плата за дзвінок?
How long will you be speaking?	Як довго ви будете розмовляти?
What is the extension number?	Який додатковий номер?
Speaking, please.	Слухаю.
Go ahead, please.	Продовжуйте.
Hold the line, please.	Не кладіть трубку, будь ласка.
You are wanted on the phone.	Вас до телефону.
I am trying to connect you.	Я намагаюся з'єднати вас.
You are through, please. Speaking.	Ви на зв'язку. Говоріть.
I am putting you through with Mr. Ivanov.	З'єдную з паном Івановим.
Mr. Petrov is not available.	З паном Петровим не вдається

з'єднатися.

There is no one by such name here.	Тут немає нікого з таким ім'ям.
There is no reply (answer) at the number.	Абонент не відповідає.
There is a call for you	Вам дзвонять.
You've got the wrong number.	Ви неправильно набрали номер.
You were cut off completely.	Вас цілком відключили.
We have been disconnected.	Нас роз'єднали.
I can't get you on the phone.	Я не можу зв'язатися з вами за телефоном.
I can't hear you well.	Я погано вас чую.
I can't be reached by phone.	Зі мною не можна зв'язатися за телефоном.
He is speaking on (over) the phone now.	Він зараз розмовляє по телефону.
The telephone is quite dead.	Телефон зіпсований.
I'll answer the call.	Я відповім на дзвінок.
I have dialled the number twice.	Я двічі набрав номер.
There is no reply.	Відповіді немає.
The line is surcharged.	Лінія перевантажена.
The line is engaged (The line is busy).	Лінія зайнята.
The line is free.	Лінія вільна.
The call is urgent.	Дзвінок терміновий.
Where is a telephone booth?	Де телефонна будка?
Where is a coin-box phone?	Де телефон-автомат?
Where is a telephone directory?	Де телефонна книга?
Where can I make a call?	Де я можу зателефонувати?
Tell him to call me up.	Скажи йому зателефонувати мені.
Tell the secretary to answer the telephone call.	Скажіть секретарю відповісти на телефонний дзвінок.
Tell her to call me back.	Скажи їй, щоб вона мені зателефонувала.
Tell your secretary to put down (take, write down) my phone number.	Скажіть своєму секретарю, щоб вона записала номер мого телефону.
As soon as he calls me up I'll tell him everything.	Як тільки він мені зателефонує, я все йому розповім.
If he calls me up we'll fix our meeting.	Якщо він зателефонує, то ми домовимося про зустріч.
After finishing the telephone interview	Після закінчення телефонного

our boss will call you back.	інтерв'ю наш начальник зателефонує вам.
What is the number of fire department (fire brigade)?	Який номер пожежної частини?
What is the number of police?	Який номер поліції?
What is the number of telephone repair service?	Який номер служби ремонту телефонів?

3. Dialogues to be remembered

***

- Hello!
- Hello. I'd like to speak to Mr. Smirnoff.
- Speaking.
- Barlow here. Good morning, Mr. Smirnoff.
- Could you speak up, please. Your voice is ever so faint.
- Hold on a minute, please. I'll try to fix the microphone. Are you here, Mr. Smirnoff?
- Oh, yes. I think that's better now.
- Mr. Smirnoff, I am calling to invite you to dinner tomorrow.
- Thanks a lot. It's very kind of you and I'd be happy to join you but I'm afraid I've got another engagement for tomorrow. I'm very sorry.
- I'm sorry too, but I do understand. I should have invited you a few days ago. Good-bye.
- Good bye, Mr. Barlow.

***

- Hello. This is Petrov from the Ukrainian Trade Delegation. Could you put me through to Mr. Russell, please?
- Hold on a minute, please. Sorry, Mr. Russell is not in now and he won't be back until late this afternoon.
- Would you ask him to call me when he gets back?
- Certainly.

***

- Hello. May I speak to Mr. Roberts?
- Sorry, sir. Mr. Roberts is not available. Is there any messages?
- No, thank you. I'll call back later.
- Right. Good-bye.

***

- Three-four-five-eight-double seven- nine.
- Can I speak to Mr. Scott?
- I'm afraid you've got the wrong number.
- Oh, sorry to have trouble you.
- That's all right.

***

- Hello, I'd like to talk to Mr. Smith.
- I'm afraid you have the wrong number. What number were you calling?
- I was calling 340-01-98.
- This is 34-01-98. But there is no one by the name of Smith here. This is a private residence.
- I'm sorry to have bothered you.
- That's quite all right.

***

- I'm sorry. I can't hear what you are saying. Could you speak up, please?
- Hello, hello. Are you there?
- Your voice is fading and there's some noise interfering. Hello, hello…
- (no reply) Operator. We had a very bad connection and could scarcely hear each other. Could you help us?
- Yes, sir. I'll try to do something about it.

***

- Five-seven-three-one-nine-oh-four.
- Good evening. Can I speak to Mr. Jones, please?
- Sorry. Mr. Jones is on the other line. Will you wait, please?
- All right.
- Sorry to have kept you waiting. I'm putting Mr. Jones on the line.
- Thank You

4. Translate in writing.

***

- З'єдную.
- Алло, будьте люб'язні пана Андерсена, будь ласка.
- Хвилинку Хто питає?
- Алла Іванівна. Я телефоную з Києва. Термінова розмова.
- Не вішайте слухавку, будь ласка.
- Алло, говорить Андерсон.
- Алло! Алло! Пан Андерсон, ви добре мене чуєте?
- Так, звичайно. Радий, що упізнали мій голос.
- Я прочитала вашу статтю. Вона дуже цікава. Вітаю вас.
- Дуже радий це чути. Дякую.

***

- Алло! Попросіть до телефону Олесю Іванівну.
- Боюся, її немає. Що-небудь переказати?
- Так, будь ласка. Перекажіть їй, що я буду телефонувати рівно о 15.00. Моє прізвище Кравченко. Валентин Кравченко.
- Добре. Що-небудь ще?
- У мене для неї приємна новина. Вона перемогла в олімпіаді з англійської мови.
- Це дуже приємна новина. Я перекажу. Дякую.

- Дякую. До побачення.

***

- Це готель „Торсток”?
- Так. Доброго ранку. Говоріть. Я Вас слухаю.
- Я б хотіла забронювати номер по телефону.
- Назвіть себе, будь ласка.
- Пані Козлова.
- Дякую. Який номер Ви бажаєте?
- Одномісний, з усіма зручностями.
- Так, я можу забронювати Вам одномісний номер з усіма зручностями.
- Скільки він буде коштувати?
- 100$ на добу.
- Ви можете підтвердити заказ письмово?
- Так, я підтверджу цей заказ письмово. Я напишу сьогодні та відправлю по e-mail.
- Дякую. До побачення.
- До побачення.

5. Situation for spontaneous projects.

1. Your science chief phones you but you are not available. He leaves a message saying to call him back. You call him back but you can’t get him on the phone. His office phone doesn’t answer, there is no reply at his home phone, you don’t know the number of his mobile phone. Find the way out because it is necessary for you to speak with your science chief. The matter is urgent.
2. You’ve read an advertisement in a newspaper about a job opening. There is a vacancy of a florist (ecologist). You call the office up but you can’t get the manager on the phone. Try to find how to be connected with him, because you need this job very much.
3. You are calling from Kharkiv. You want to reserve a room in a hotel in Kyiv, but you don’t know the telephone number of any Kyiv’s hotel. You have to book a room.

TEST- CONTROL FOR MODULE 7.

Task I. Максимальна кількість балів: 10 (Total 10)

Choose the correct word to complete the sentences.

1. Scientist and engineers … developing the ways to reduce the acidity of rains since the beginning of this century.

A) are C) have been
B) has D) will have

2. The sulfur dioxide … already … greatly to acid formation.

A) contribute C) are contributing
B) has contributed D) contributed

3. They informed that there … suggested a 5% reduction of sulfur dioxide.

A) has been C) had been
B) will have been D) had had

4. The effects of acid rain on aquatic ecosystems … investigated before the end of the century.

A) has not been C) had not been
B) have not been D) will be

5. We … disconnected already before the talk was over.

A) have been C) will have been
B) has been D) had been

Task II. Total 20

Give English or Ukrainian equivalents for the following.

1. Кислотний дощ
2. Кислотні опади
3. Види опадів
4. Речовина, що розчиняє
5. Накопичення кислотних опадів
6. Acidified lakes
7. Kinds of organisms
8. Long-term study
9. To cause direct damage
10. High elevations
11. Air-pollution sources
12. Aquatic ecosystems
13. Вас до телефону.
14. Ви невірно набрали номер.
15. Можна пана Н. до телефону?
16. Говоріть голосніше.
17. Зі мною не можна зв’язатися по телефону.
18. Він зараз розмовляє по телефону.
19. Лінія перевантажена.
20. Скажіть йому перетелефонувати мені.

Task III. Total 10

Give chemical formula for the following.

1. Hydrogen peroxide
2. Sulfuric acid
3. Hydroxyl ions
4. Calcium carbonate
5. Nitric acid
6. Gypsum
7. Limestone
8. Oxygen
9. Hydrogen
10. Water

Task IV. Total 10

Choose the correct word to complete the sentences.

1. Most of healthy lakes have a … above 6.

A) water C) ph
B) depth D) surface

2. Acid … is the accumulation of acid-forming particles.

A) rain C) sleet
B) wind D) deposition

3. Lakes with a ph of 4.5 are considered to be …

A) dirty C) sterile
B) clean D) dead

4. I'm afraid you have the wrong …. It's 110-11-12.

A) phone C) advice
B) information D) number

5. Mr. Russell is not … now. He is on business trip.

A) here C) out for
B) available D) speaking

Task V. Total 10

Insert prepositions where it is necessary.

1. Mr. Smirnoff is … dinner now.
2. You are wanted … the phone.
3. He entered … the conference hall in time.
4. Reports … high acid rain damage have come from Canada and England.
5. Sulfur dioxide contributes … acid formation.

Task VI. Total 10
Translate into English.

1. Він вивчив класифікацію кислотних дощів до семінару.
2. Його запитали, коли відбувалися вологі реакції.
3. Проблема кислотних дощів досліджується протягом десятиріч.
4. Кислотні дощі по-різному спричиняють шкоду.
5. Сірчана кислота – основний компонент кислотних дощів.

Task VII. Total 10
Compose questions.

1. Canada suggested a mutual 50 percent reduction of CO_2. (Subject. What…?)
2. Canada had suggested a mutual 50 percent reduction of CO_2 by 2000. (General. By what year …?)
3. Lakes and forests literally die in Canada (Where …?)

Task VIII. Total 20
Translate in writing without dictionary (Time for the task – 10 min).

Aesthetic Pollution

Most pollution can be measured by the amount of a particular chemical in water, air, or soil. Scientists measure these amounts and their effects on human, animal, and plant health. But some forms of pollution affect our aesthetic senses and so are more difficult to define.

Visual pollution is a sight that offends us. This type of pollution is highly subjective and is, therefore, difficult to define or control. To most people, an open garbage dump is a form of visual pollution. A dilapidated home or building may also be offensive, especially if located in an area of higher-priced homes. A heavily littered highway or street is aesthetically offensive to most people, and litter along a wilderness trail is even more unacceptable. Some sources of visual pollution are not so clear-cut, however. To many people, roadside billboards are offensive, but they can be helpful to advertisers and to travelers looking for information. This difference of opinion is typical when it comes to judging aesthetic pollution. People do not always agree on what is offensive. That makes regulation of aesthetic pollution difficult.

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MODULE 8
DESERTIFICATION
CURRICULUM MATERIALS FOR MODULE 8
ПРОГРАМНІ МАТЕРІАЛИ ДО МОДУЛЯ 8

Тема1. Наказовий спосіб (The Imperative Mood).Вживання та утворення наказового способу. Зворотний порядок слів, або інверсія. Повторення вивченого матеріалу.
Тема 2. Аналітичне читання: тексти за фахом з базових підручників.
Тема 3. Усна практика: Mass media in our life. Реферування аутентичних текстів за фахом. Діалогічне мовлення за вказаними темами.Аудіювання за темою модуля 8. Проектне дослідження за модулем 8.
Тема 4. Індивідуальне читання: Аутентичні тексти за фахом.
Контрольна робота за матеріалами модулю 8.
У результаті вивчення модуля 8 студент повинен
знати: Наказовий спосіб (The Imperative Mood).Вживання та утворення наказового способу. Зворотний порядок слів, або інверсію.
вміти: стежити за бесідою і підтримувати бесіду на знайому тему або брати участь в розмові на теми досить широкого діапазону; переглянути тексти в пошуках відповідної інформації і розуміти загальні інструкції або поради.

STUDY MATERIALS FOR MODULE 8
НАВЧАЛЬНІ МАТЕРІАЛИ ДО МОДУЛЯ 8

8.1 Unit 15. Desertification

1. Glossary
Activity 1. Read and remember the following words, compose sentences of your own with them.

1.desertification-	опустелювання
2. degradation-	деградація, занепад
3.controversy-	суперечка
4. arid -	засушливий
5.semi-arid -	напівзасушливий
6.dry sub-humid areas-	сухі напівволоі райони
7. paleodesert-	палеопустеля

8. margin край
9. contributing- сприяння
10. displacement- переміщення
11. to combat- боротися
12. fragile- крихкий, тендітний
13.to sustain- підтримувати
14. aquifers- водоносні горизонти
15. to exacerbate- посилювати
16. precariousness- ненадійність
17. land exhaustion- виснаження землі

II. Vocabulary check.

Activity I. Give English equivalents of the following:

1. виснаження землі
2. людська діяльність
3. суперечливі докази
4. засушливий район
5. взаємодія
6. піщані моря
7. стабілізовані рослинністю
8. крихка екосистема
9. перевипасання худоби
10. перенаселенність

Activity 2. Match the following words with their explanations

arid	a porous deposit of rock containing water
desert	planting, tending,improving of crops
desertification	dry
aquifers	watering
nutrients	out of the mainstream
cultivation	a basic structure of organization
degradation	a process by which fertile land turns into barren land or desert
irrigation	worsening
marginalisation	region devoid of water
infrastructure	mineral substances absorbed by the roots of plants for nourishment

III. Grammar review

Наказовий спосіб (The Imperative Mood)

1.Дієслова у наказовому способі виражають спонукання до дії, тобто наказ, пораду, прохання, застереження тощо. **Стверджувальна форма** наказового способу другої особи однини і множини збігається з формою інфінітива, але без частки **to:**

Put the books on the table.	Поклади книжки на стіл.
Hear what I tell you.	Слухайте, що я вам кажу.

2.**Заперечна форма** другої особи наказового способу утворюється за допомогою дієслова **do**, заперечної частки **not** та інфінітива основного дієслова без частки **to**. В усному мовленні замість **do not** звичайно вживається скорочена форма **don't.** Дієслово **be** також вживається з **do not/don't**:

Don't sing now!	Не співай зараз!
Don't be late!	Не спізнюйтесь!

3. Допоміжне дієслово **do** може вживатися у стверджувальних реченнях для підсилення прохання:

Please, **do come**.	Будь ласка, приходьте!

4. Для утворення форм наказового способу першої і третьої особи однини й множини вживається дієслово **let** у сполученні з відповідним особовим займенником в об'єктному відмінку або іменником у загальному відмінку та інфінітивом основного дієслова без частки **to**:

Let us (let's) *read*.	Давайте почитаємо.
Let him *read*.	(Не)хай він почитає.
Let this boy *answer*.	(Не)хай цей хлопець відповідає.

5. Заперечна форма першої і третьої особи наказового способу утворюється за допомогою **don't let (do not let):**

Don't let him *go*.	Не дозволяйте йому йти.
Don't let her *offend* you.	Не дозволяйте їй ображати себе.

Exercise 1.Complete the sentence with one verb from the list below. Be careful with negatives.

Add	pay	count	come	look	cry
put off	take	apologize		be	cook

1._____in,Tom._____your coat off. It's hot here.
2._____careful while crossing the street!
3._____! Everything will be all right!
4._____ in the mirror. You are so dirty!
5._____ salt to potatoes when you cook them.
6.Never _____ till tomorrow what you can do today.
7._____ bills the days you get them.
8._____ for your being late.
9._____ chicken when it's frosen.
10._____ your change after buying something.

Exercise 2. Translate into English.
1.Давайте поїдемо куди-небудь на екскурсію.
2.Нехай вони закінчать свою роботу.
3.Не заважайте йому, нехай він виконає цю вправу самостійно.
4.Не читайте при поганому освітленні, ви можете зіпсувати зір.
5.Не робіть цього, ви потім пожалієте,що не послухали мене.
6.Дозвольте їй виступити на конференції з доповіддю.
7.Не засмучуйте батьків своїми оцінками.
8.Давайте висадимо багато дерев у місті, які будуть очищати наше повітря.
9.Не дозволяйте дітям грати на дорозі.
10. Давайте відвідаємо нову виставку у нашому університетському музеї.

IY.Pre-text discussion

Activity 1. Do you know that:

1.Desertification is the degradation of land in any dry land
2.The earliest known discussion of the desertification arose soon after the French colonization of West Africa.
3. Deserts have grown and shrunk independent of human activities.
4. Dry lands occupy approximately 40-41% of the Earth's land area.
5. Desertification has played a significant role in human history, contributing to the collapse of several large empires.

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that…"

Activity 3. Give your opinion on the following:

1. The causes of desertification.
2. The role of deserts in the life of the people of Sub-Saharan regions.
3. Preventive measures against desertification.

Y. Read and translate text 15A

Text 15 A

Desertification

Desertification is the degradation of land in arid, semi-arid, and dry sub-humid areas. It is caused primarily by human activities and climatic variations. Desertification does not refer to the expansion of existing deserts. It occurs because dryland ecosystems, which cover over one third of the world's land area, are extremely vulnerable to over-exploitation and inappropriate land use. Poverty, political instability, deforestation, overgrazing, and bad irrigation practices can all undermine the land's fertility.

The earliest known discussion of the topic arose soon after the French colonization of West Africa.The world's great deserts were formed by natural processes interacting over long intervals of time. During most of these times, deserts have grown and shrunk independent of human activities. Paleodeserts are

large sand seas now inactive because they are stabilized by vegetation, some extending beyond the present margins of core deserts, such as the Sahara, the largest hot desert.
Desertification has played a significant role in human history, contributing to the collapse of several large empires, such as Carthage, Greece, and the Roman Empire, as well as causing displacement of local populations.
Dry lands occupy approximately 40-41% of the Earth's land area and are home to more than 2 billion people. It has been estimated that some 10–20% of dry lands are already degraded, the total area affected by desertification being between 6 and 12 million square kilometres, that is about 1–6% of the inhabitants of dry lands live in desertified areas, and that a billion people are under threat from further desertification. The Sahara is currently expanding south at a rate of up to 48 kilometers per year
At first, land use and land degradation were thought to be the primary causes. The United Nations Conference on Desertification focused attention on land use, and led to the emphasis on land degradation as the cause of desertification. Since then, we have found that the issue is more complicated. Climate of the Sahel and the Sahara has changed greatly over the past11, 000 years since the end of the last ice age. The Sahara has expanded and contracted, changing the course of civilizations. One of the most striking climate changes of the past 11,000 years caused the abrupt desertification of the Saharan and Arabia regions midway through that period. The resulting loss of the Sahara to agricultural pursuits may be an important reason that civilizations were founded along the valleys of the Nile, the Tigris, and the Euphrates.
German scientists, employing a new climate system model, have concluded that this desertification was initiated by subtle changes in the Earth's orbit and strongly amplified by resulting atmospheric and vegetation feedbacks in the subtropics. The timing of this transition was, they report, mainly governed by a global interplay among atmosphere, ocean, sea ice, and vegetation.

As the desertification takes place, the landscape progresses through different stages and continuously transforms in appearance. The desertification generally creates increasingly larger empty spaces over a large strip of land, a phenomenon known as "tiger fur pattern". A mathematical model has been made of it by Sjors van der Stelt.Besides explaining the process of desertification, the model is also useful for developing methods to combat it.

YI. Comprehension check

Activity 1. Do the false/true statements.

1. Desertification is the degradation of land.
2. Desertification is caused primarily by human activities.
3 Dryland ecosystems cover over one third of the world's land area.
4. Dryland ecosystems are extremely vulnerable to inappropriate land use.
5. The Sahel is the transition region between the Sahara and wetter regions.

6. The Sahel is one of the richest areas on earth.
7. Climate of the Sahel and the Sahara has not changed over the history.
8. The course of civilizations was not changed by the Sahara's transformations.
9. The loss of the Sahara to agriculture led civilizations to be founded along the valleys of the rivers.
10. Desertification could have been caused by subtle changes in the Earth's orbit

Activity 2 . Look through text 15A. For questions (1-5) choose the correct answer (A, B, C or D).

1. Desertification is the degradation
a) of land
b) forests
c) sea shores
2 . Desertification is influenced by
a) political situation
b) wars
c) nature and humans
3 . The Sahel is
a) the semi-arid transition region
b) wet region of Africa
c) sand and dunes
4 . Conference on Desertification focused attention on
a) environment
b) water reserves
c) land use
5 . Desertification was initiated by subtle changes in
a) climate
b) the Earth's orbit
c) water level in the oceans

VII. Discussion.

Activity 1. Read the text. Choose the most suitable heading from the list (A-G) for each part (1-5) of the text. There are two extra headings which you do not need to use.

A. Global interchange between the ocean, atmosphere, vegetation.
B. Human misuse of the land.
C. What is desertification?
D. Expansion of existing deserts.
E. Sahel as the semi-arid transition region.
F. The history of Sahel.
G. Influence of Sahara on civilization.

Activity 2. Work in pairs . Ask and answer the questions on text 15A.

Activity 3. Translate in writing and reproduce.

"Збережемо степи від заліснення!

Збережемо Україну від опустелювання!”

З такою ініціативою виступили учасники громадської кампанії «Збережемо українські степи!». Цього разу учасники кампанії пропонують державі не просто зупинити нищення українських степів а і заощадити значні кошти та зупинити при цьому опустелювання півдня країни. Переважну більшість земель запасу степового регіону, складають балки, кургани, прибережні смуги та схили вздовж річок та ставків, що представляють собою фрагменти степової рослинності. Степовий регіон, будучи найбільш розораною частиною України, має дуже невелику частку територій, які ще зберігають залишки степових природних комплексів і є останніми місцями збереження генофонду всього степового біологічного різноманіття. Степова рослинність складає близько 1 % від загальної площі території України і є притулком для десятків видів рідкісних та зникаючих, ендемічних та реліктових видів тварин і рослин, що охороняються не тільки вітчизняним природоохоронним законодавством, але й міжнародним. Саме ці об’єкти повинні стати мережею перспективних природно-заповідних об’єктів та основою екологічної мережі регіону. Натомість саме ці території стають полігоном для заліснення, що є прямим знищенням всіх зникаючих степових видів тварин і рослин та призведе до остаточного знищення степів на території України. Це порушує вимоги Закону України “Про Червону книгу України”.

VIII. Skim text 15B and get ready to speak about the causes of desertification.

Text 15 B

Dryland ecosystems are already very fragile, and can rarely sustain the increased pressures that result from intense population growth. Many of these areas are inappropriately opened to development, when they cannot sustain human settlements.The most common cause of desertification is the over -cultivation of desert lands. Over-cultivation causes the nutrients in the soil to be depleted faster than they are restored. Improper irrigation practices result in salinated soils, and depletion of aquifers.

You also read that both nature and humans influence desertification. Let’s look at one region that has captured the attention of the world for at least the past 40 years— the Sahel of North Africa. The Sahel is the semi-arid transition region between the Sahara desert to the north and wetter regions of equatorial Africa to the south. It extends from the Atlantic in the west to the Indian Ocean in the east. It has high variability of rainfall, and the land consists of stabilized ancient sand seas. It is one of the poorest and most environmentally degraded areas on earth.

Beginning in the 1960s, the area became very dry and hundreds of thousands died of starvation. Was the devastation the result of human misuse of the land, was it the result of natural changes in climate, or was it the result of both? Answers to these questions have not come easily.

At least 90% of the inhabitants of drylands live in developing nations, where they also suffer from poor economic and social conditions. This situation is exacerbated by land degradation because of the reduction in productivity, the precariousness of living conditions and the difficulty of access to resources and opportunities.
A downward spiral is created in many underdeveloped countries by overgrazing, land exhaustion and overdrafting of groundwater in many of the marginally productive world regions due to overpopulation pressures to exploit marginal drylands for farming. Decision-makers are understandably averse to invest in arid zones with low potential. This absence of investment contributes to the marginalisation of these zones.When unfavourable agro-climatic conditions are combined with an absence of infrastructure and access to markets, as well as poorly adapted production techniques and an underfed and undereducated population, most such zones are excluded from development.

Exercise 1. Match (1-10) with their definitions (A-L).There are two definitions that you do not need to use.

1. subtle	A. weak
2 . midway	B. response
3. abrupt	C. not obvious
4. misuse	D. half way through
5. striking	E. destruction
6. vulnerable	F. sudden
7. feedback	G. worsening
8. devastation	H. remarkable
9. degradation	I. wet
10.humid	J. strong
	K. abuse
	L. attractive

Exercise 2. 1. For statements (1-10) choose the best alternative (A, B or C) to replace the expressions In italics:

1. Desertification is the degradation of land in *arid…(line 1)*
A dry B windy C humid
2. Desertification does not refer to the *expansion* of existing deserts.(line 3)
A narrowing B leveling C widening
3. It occurs because *dryland* ecosystems, which cover…. (line 4)
A island B marshland C mainland
4….vulnerable to over-exploitation and *inappropriate* land use.(line 5)
A insufficient B wrong C economical
5. …bad irrigation practices can all *undermine* the land's fertility.(line 7)
A weaken B strengthen C belittle
6…. one region that has *captured* the attention…(line 9)

A caught B seized C got
7…. has high *variability* of rainfall…(line 13)
A dependability B changeability C inconstancy
8…. and the land consists of stabilized *ancient* sand seas. (line 13)
A young B old C modern
9…. hundreds of thousands died of *starvation*. (line 16)
A hunger B malnutrition C undernourishment
10. … caused the *abrupt* desertification of the Saharan and Arabia regions. (line26)
A sudden B slow C unexpected

IX. Long-term project work.
Prepare projects on the following topics.
1.Measures to be taken to fight desertification.
2. Ukraine' s efforts in fighting desertification.

X. Spoken English (Every day English). Mass media in our life.

1. Dialogues to be remembered and reproduced.

****

- What can you say about the role mass media plays in our life?
-Well, mass media is an important part of our life. People from different walks of life have become nowadays listeners, readers, viewers.
- And what about reading? Do young people still read newspapers or magazines?
- Reading newspapers and magazines, watching TV, listening to the news on the radio is our main means of getting information in all its variety.
- As we all know, newspapers with their enormous circulation report different kinds of news.
- Yes, there are all kinds of pnewspapers. They carry articles which cover the latest international and national events. There are special newspapers which gave a full coverage of commercial, financial and publish affairs.
- Are there special newspapers for the youth?
- There are newspapers and magazines for young people. They give a wide coverage of news, events and reports on education, sports, cultural life, entertainment and fashion.
-And what about the radio? Have new electronic gadgets already replaced the radio?
- Radio broadcasts are valued mainly for their music news. TV is the most popular kind of mass media now.
- Thank you for the interesting talk. Hope to see you soon. Bye!
- Bye for now. Let's keep in touch.

▪ ***

- Hello, Jane! Haven't seen you for ages. Where have you been all this time?

- Hi, Maria! It's nice to see you, too. You see, I was busy doing my project work on mass media.
- What exactly did you do?
- As a matter of fact, I was studying the role of mass media in our present-day life.
-How interesting ! And what did you find out?
- Well, first of all, I did the research on the influence of TV on young people. And I've found some interesting things.
-What do you mean?
- As you perhaps know, there are a wide variety of opinions how television affects young people. It is believed that violent behaviour in later life could be linked to teenage viewing habits. US researchers say that adolescents who watch more than one hour of television a day are more likely to become violent adults. Effects of media may be particularly sensitive in early adolescence, because it is a time for the development of socials skills and personalities.
- Are there any other opinions?
- Other researchers claim that television can't be a reason for a violent behaviour. The behaviour also depends on living conditions, relationship with family members and other factors.
-It is a very interesting subject. But I'm afraid I have to be going. Thanks. Hope to meet you soon and continue our talk. Bye!
-Bye! Keep well!

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- Hi, Christina!
- Hello, Bob! Nice to see you.
-Happy to meet you, too.What have you been doing rcently,Christina?
- I was busy with my assignment.
-Which is what?
- I studied the role of TV in our life.
-And what have you found out?
-Well, nowadays some people raise a question whether television can be brainwashing today's youth. Youth are becoming the offspring of the television. Usually they turn into reality whatever they see on TV.
-What about kids? As far as I know, many kids spend hours in front of the TV.
-You are quite right. Kids like to become the people they see on television. So, we could say that television is brainwashing today's youth into little soldiers preparing for war. Many children are paying a lot of attention to different kinds of TV programmes and they don't do this at school.
- I think that after the invention of television, the problem had become inevitable. Spending numerous hours in front of this "boob tube", children are not being able to express their feelings. When people watch TV they stick to it and don't see anything around them.
- On one hand television gives us a lot of information, but on the other hand it might be called as the "brainwasher of today's youth".

- So, talking about mass media, we should discuss the effects of mass media on society. The media virus of the 21st century will influence your opinions.
- Yes, this is true. Anyway, it was nice talking to you but I must rush. See you! Bye, Christina!
- Bye, Bob!

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- Як ти думаєш, Катю**,** засоби масової інформації відповідальні за зростання рівня злочинності?
- Кажуть, ще великий Платон задавав подібне питання у свій час. Він хвилювався, чи насильство у п'єсах буде мати негативний вплив на людей.
- Але ми не можемо пом'якшити вплив ЗМІ на суспільство. Деякі вважають, що це прокляття для сучасного суспільства, тому що ЗМІ спонукають осіб до скоєння злочинів.
- Хто знає, може ці люди мають рацію.

2. Translate in writing

Засоби масової інформації (ЗМІ), мас медіа (Mass media) — преса (газети, журнали, книги), радіо, телебачення, інтернет, кінематограф, звукозаписи і відеозаписи, відеотекст, телетекст, рекламні щити і панелі, домашні відеоцентри, що поєднують телевізійні, телефонні, комп'ютерні та інші лінії зв'язку. Всім цим засобам притаманні якості, що їх об'єднують — звернення до масової аудиторії, доступність багатьом людям, корпоративний зміст виробництва і розповсюдження інформації. Термін мас медіа застосовується також до організацій, які контролюють ці технології, наприклад, телевізійних каналів або видавництв.

В Україні діяльність ЗМІ регулюється законами «Про друковані засоби масової інформації (пресу) в Україні», «Про інформацію», «Про рекламу», «Про телебачення та радіомовлення» та низкою інших.

Громадські медіа, часто пов'язані з «громадськими комунікаціями» та можуть приймати різні форми, можуть стосуватись різних груп людей та бути пов'язані з великим числом різних напрямків. В той же час, громадські медіа являють собою засіб для створення дискусії та залучення звичайних громадян, що об'єднані певними цілями. Головна риса громадських медіа в тому, що вони не залежать від комерційних тенденцій та популярних тем для обговорення. Це дозволяє створювати різні моделі громадських медіа, які можуть або пропонувати відкриту редакційну політику, або більш сфокусовану на залученні громадян.

TEST/REVIEW

Task I. Максимальна кількість балів: 20 (Total 20)

c) Choose the correct word to complete the sentences.

d) Translate the sentences

1. The Greenhouse effect is considered … the life on the earth.

A) to predict	C) to realize
B) to alter	D) to stop

2. The “Greenhouse effect” is known … by professor Bert Bolin.

A) to have predict	C) will be predicted
B) was predicted	D) to have been predicted

3. He was the first British writer … the Nobel prize for literature.

A) to give	C) to be awarded
B) to award	D) to have been awarded

4. They informed that there … suggested a 5% reduction of sulfur dioxide.

A) has been	C) had been
B) will have been	D) had had

5. Scientists and engineers … developing the ways to reduce the acidity of rains since the beginning of this century.

A) are	C) have been
B) has	D) will have

Task II. Total 20

Give English or Ukrainian equivalents for the following:

1. наукова фантастика
2. жива істота
3. локальний вилив
4. рівень моря
5. зворотній зв’язок
6. суперечливий, дискусійний
7. кислотні опади
8. hydrogen peroxide
9. desirable
10. номер з вікном на вулицю
11. жити в однокімнатній квартирі з кимось
12. квартира вам підходить
13. я можу дозволити орендувати більш велику квартиру
14. можете казати голосніше
15. слухаю
16. розповсюджений по всьому світу
17. наслідки
18. приймати до уваги

19. мешканці планети
20. значні зміни

Task III. Total 5
Insert prepositions where it is necessary.

1. I am living tonight. I'd like to check….
2. I am planning to stay her … a week.
3. We are looking forward … receiving you.
4. Global warming has become a major scientific and political issue … the past decade.
5. We are burning more and more fossil fuels … power stations, … factories and … our cars.

Task IV. Total 15
Compose questions.

1. The words Global Warming and the Greenhouse Effect are used interchangeably. (What words? General, Subject)
2. The higher temperature allows a longer growing season. (Subject, Object, General)
3. We went to the conference to report on the greenhouse effect. (Who? Why? Where?)
4. Many studies indicate the warming of the Earth. (What? General, Subject)
5. As the temperature rises the amount of water vapour in the air will increase. (Why? What? general)

Task V. Total 10
Translate into English.

1. Вважається, що повний цикл обміну вуглекислого газу здійснюється за 300 років.
2. Чим більше концентрація парникового матеріалу в атмосфері, тим буде менше вплив інфрачервоної енергії.
3. прочитав, що щорічно вищі рослини при фотосинтезі поглинають 200 млрд. тон вуглецю.
4. Мені потрібно, щоб Ви забронювали 3-х зірковий готель на 5 днів.
5. Нереально, щоб він міг заплатити за 5-ти зірковий готель.

Task VI. Total 10
Compose sentences.

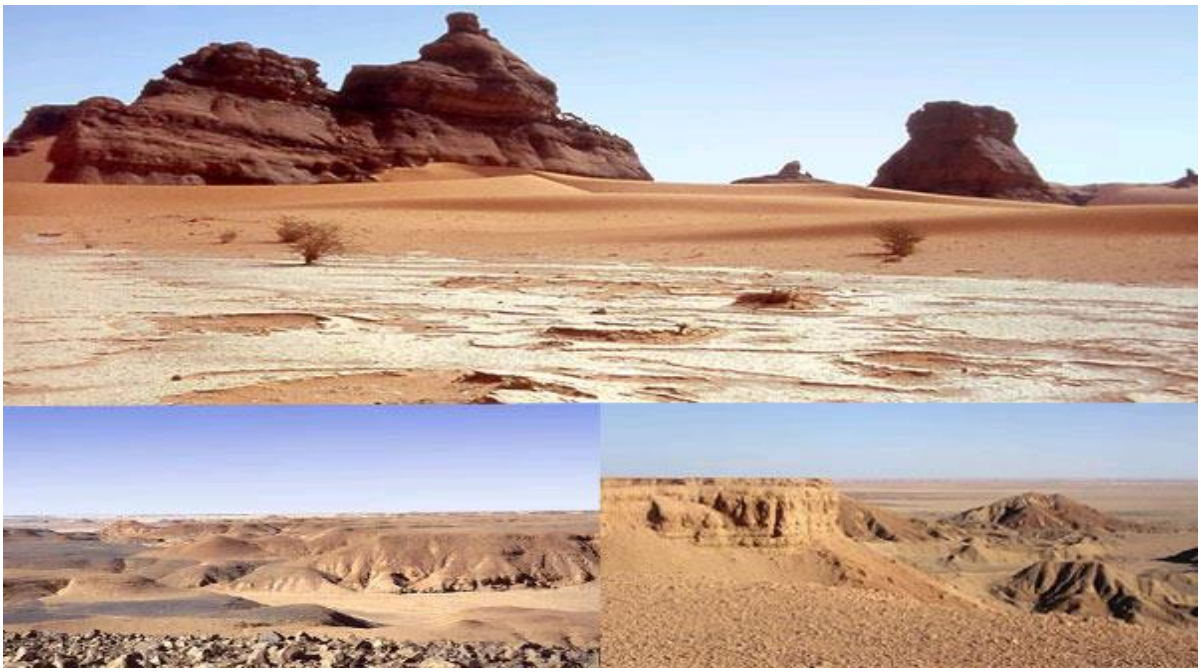
1. The, many, are, Global, Warming, words, used, times, many, interchangeably, the Greenhouse, Effect.
2. Greenhouse, process, is. the, naturally, a, effect, occurring.

3. CO_2, year, is, every, in, the, the, of, amount, atmosphere, increasing.
4. The, disturbed, nature, has, balance, been, of.
5. Season, a, growing, allows, longer, the, temperature, higher.

Task VII. Total 20
Make up a situation of 20 sentences.

You advertised in a newspaper about selling of your own cottage in a suburb of a city. Many people call about this advertisement. And at last you managed to sell the property.

8.2 Unit 16
WATER UNDER THE SAHARA



1. Glossary

Activity 1. Read and remember the following words, compose sentences of your own with them.

1.entire – весь, цілий
2. imprecise- неточний
3.coincide- співпадати
4. precipitation- опади
5. aquifer- водоносний горизонт
6. conjecture- припущення
7. acquire- набувати
8. substantial- значний
9. pluvial - дощовий
10. marl- мергель
11. impervious - непроникний
12. percolate – просочуватися
13. limestone- вапняк
14. equitable- справедливий

II. Vocabulary check

Activity 1. Give Ukrainian equivalents of the following :

1.arid surface

2.lower latitudes
3.natural reservoirs of water
4.average annual rainfall
5.substantial stores of water
6.pluvial periods
7.the crucial question
8.sand dunes
9.riverbeds
10.evaporation

Activity 2.Match the following words with their explanations

wildlife	to worry about smth
vulnerable	going upward
devastating	stern, strict
soaring	weak, easily attacked
severe	completely destructive
impact	the force of one object hitting another
upsurge	an act of rising suddenly
concern	animals and plants which live and grow wild
flammable	without needing operation by man
autopilot	easily excited

III. Grammar review

Зворотний порядок слів, або інверсія.

1. Порядок слів, при якому присудок стоїть перед підметом, називається зворотним або інверсією. Буває повна інверсія і часткова. При повній інверсії весь присудок стоїть перед підметом, а при частковій – частина присудка (допоміжне або модальне дієслово) стоїть перед підметом, а повнозначне дієслово – після підмета.

2. Часткова інверсія має місце:

а) у питальних реченнях

Can I show you my library?	Можна я покажу тобі мою бібліотеку?
Where did they find her?	Де вони знайшли її?

б) У розповідних реченнях, що починаються словами **never** *ніколи;* **little** *мало* **;seldom** *рідко;***in vain** *марно;* **hardly,scarcely** *ледве;* **only** *лише;* **not only** *не лише*, **nor, neither** *також ні;* **no sooner (than)** *як тільки.* У цьому випадку перед підметом ставиться модальне або переше допоміжне дієслово, що є у складі присудка. Якщо присудок виражений дієсловом у Present or Past Simple , то перед підметом ставиться допоміжне дієслово **do/does/did**, а після підмета основне дієслово в першій формі:

Only once **did they** win the match.	Тільки один раз вони виграли матч.
No sooner was one task completed **than** we were given another one.	Як тільки ми виконали одне завдання, нам дали інше.
Seldom do I watch such programs.-	Рідко я дивлюся такі програми.
Hardly had they entered the house, when it started raining.	Ледве вони увійшли до хати, як почався дощ.

3.Повна інверсія спостерігається в таких випадках:

а) У реченнях,що вводяться словом **there** , яке не має лексичного значення:

There is something in the bag.	У сумці щось є.
There are many universities in our country.	У нашій країні багато університетів.
There lived she quietly with her husband.	Жила вона спокійно зі своїм чоловіком.

б) У реченнях, які починаються обставинами місця, якщо підмет виражений іменником, а дієслово-присудок не може мати прямого додатка:

In the doorway stood a stout old gentleman in a blue coat.

У дверях стояв огрядний старий джентльмен у синьому пальті.

в) У реченнях, що починаються обставинами, вираженими словами **so, thus, now, then, here,** де функцію підмета виконує іменник.

Now was the moment to act.	Зараз був той момент, коли потрібно було діяти.
Here comes my brother.	Ось іде мій брат.

Exercise 1. Learn the examples

It was Mary that/who called you.
Is it Jim that/whom you are going to meet?
Was that why they moved house?
What he needs is a long holiday.
Do have some more coffee.

Exercise 2. Rewrite the sentences as in the example:

1. Ann decorated the pumpkin.
It was Ann who /that decorated the pumpkin.
2.The children need somewhere to play.
3.Did you give him that useless information?
4. What do you mean by talking to me like that?
5. You should concentrate more while you are driving.
6. I telephoned our cousin.
7. Where are you going to be at Easter?
8. You need a nice cup of tea.

9. When did you get home?
10. Why did you borrow money from Anna?

Exercise 3. Complete the sentences using the words in bold. Use two to five words.

1. You weren't paying attention when the accident happened.

That It was you that wasn't paying attention when the accident happened.

2. The doctor promised that I would be out of bed in a couple of days.

Did The _____would be out of bed in a couple of days.

3. Alexander Fleming discovered penicillin.

Was It _____ discovered penicillin**.**

4. Did you meet Marlon Brando in Holliwood?

Met Was _____ Marlon Brando in Hollywood?

Exercise 4. Translate into English.

1.Розпочинаючи бізнес, не покладайтесь на друзів, знайомих чи родичів, покладайтесь на фахівців.
2. Та сідайте ж!
3. Де я не був, так це у Нью Йорку.
4.Втрата клієнта – це шлях до банкрутства.
5. Я не дуже люблю мексиканську їжу, і мій чоловік теж.
6.Ні я, ні мій брат не були на Середземному морі.
7.Фільм був такий нецікавий, що ми майже заснули.
8.Ні в якому випадку не приймайте більше двох таблеток на день.
9. Він не пам'ятав днів народження ні своєї матері, ні сестри.
10. Ніде більше я не бачив так багато квітів, як на виставці у Челсі.

IV. Pre-text discussion

Activity 1. Do you know that:

•Below the arid surface of the great desert are huge natural reservoirs of water?
•The Sahara area is almost as big as the territory of the USA?
•In summer the daytime temperature is often as high as 120 degrees Fahrenheit in the shade?
•Artesian water is likely to move over considerable distances from a recharge area?

Activity 2. Make up dialogues of your own, discussing the information given in the part "Do you know that".

Activity 3.Give your opinion on the following

1.The shift of climate zones in Ukraine.
2. Desertification in the south of Ukraine.

REVISION EXERCISES

Exercise 1. Fill in the following words transforming one of them into an adverb. Translate into Ukrainian.

1.This is a_____book to read (comparative, easy).
2_____car production is not always_____to estimate_____ (total, easy, accurately).

3.Even some_____.tools of_____analysis are not _____known (common, economic, generally).
4.Some microeconomic analyses offer_____detailed treatment of_____ decisions (extreme, individual).
5.If we compare the market for cars and bicycles_____, we may be able to offer a_____explanation for their_____.prices (careful, good, relative).

Exercise 2. Make sentences combining 1-10 with a-j. Translate them into Ukrainian.

1. The information	a) coming out of Kashmir is quite depressing
2. The people	b) are located just outside New York.
3. The equipment	c) you requested is in the port
4. Travel	d) she gave us was to sell out immediately
5. The news	e) we are going to move to are ideal
6. The advice	f) we want to reach are all in this area
7. Their headquarters	g) we offered was not enough for them
8. The premises	h) we are going to employ will work in the field
9. The money	i) we bought from you is not functioning properly
10. The personnel	j) broadens the mind

Exercise 3. Put the verb in brackets into the correct tense and translate the sentences into Ukrainian.
The Greenwood Boys (be) a group of popular singers. At present, they (visit) all parts of the country. They (arrive) here tomorrow. They (come) by train and most of the young people in the town (meet) them at the station. Tomorrow evening they (sing) at the Workers' Club. The Greenwood Boys (stay) for five days. During this time they (give) five performances. As usual, the police (have) a difficult time. They (try) to keep order. It (be) always the same on these occasions.

Exercise 4. Choose the correct word.
1.She works for an advertisement/advertising agency.
2.How will the increase in interest rates affect/effect your sales?
3.My bank manager has agreed to borrow/lend me another $2000.
4.We have had to cancel/postpone the meeting until next Monday.
5.I am interested/interesting in their new camera.

Exercise 5. Choose the word in brackets
1.(Between/among) our students there are many who have travelled a lot.
2.He was so tired that he could hardly (to speak, to say).
3.It was rather dark, we couldn't see anything on the other (bank, shore) of the river.

4.I don’t like him (either, also).

5.I am (to go, to come) on holiday to Australia. I am (to take, to bring) my family to visit the Great Barrier Reef.

Exercise 6. Choose the correct ending of the sentence.

1. If I had any free time yesterday,	a) if you didn’t smoke
2. It would be a good thing	b) I would try to persuade her not to do so.
3. If I were you,	c) we’ll discuss it in detail
4. If you come,	d) I’d have done the work myself
5. If we have good advertising,	e) we would have spent more money
6. If we had taken your advice,	f) we’d sign the contract the same day
7. If we reached agreement,	g) the product will be a success.

Exercise 7. Choose the necessary word and put it into correct form.

1.Tom (to say, to tell) that he didn’t like Brian.

2.Jack (to say, to tell) me that he was enjoying his new job.

3.At the meeting the chairman (to say, to tell, to talk) about the problems facing the company.

4.I haven’t had (much, many) spare time lately.

5. Before a contract is signed very (much, many) preparatory work must be done

Exercise 8. Translate the sentences into English paying attention to the infinitive constructions.

1. Його запитання заставило мене розсміятися.
2. Коли ти бачив, що я плавав?
3. Я не хочу, щоб ти читав цю книгу.
4. Здається, ніхто не помітив його помилок.
5. Кажуть, що цей завод скоро почне випускати продукцію.
6. Вчора ми випадково довідались про цю подію.

Exercise 9. Choose the correct word. Translate the sentences into English.

1.Things (doing/done) by halves are never (do/done) right.

2.The letter (writing/written) yesterday is still lying on my table.

3.We understand (him/his) having to leave early.

4.They are looking forward to (us/our) visiting their company.

5.They expected the good (to sell/to be sold) on CIF terms.

6.We expected them (to clear up/to be cleared up) the matter right away.

7.There are (less/fewer) natural resources in Japan than in most developed countries

Exercise 10. Translate the following sentences into English paying attention to Gerund.

1.Вони перестали розмовляти, коли він увійшов до зали.

2.Мені не хочеться заважати йому, він занятий.

3.Коли я відправив телекс, я почав працювати над цим контрактом.

4.Вони почали виправляти дефекти.

5.Країна продовжує експортувати незбагачену руду.
6.Ми віддаємо перевагу роботі наших спеціалістів.

V. Read, translate and discuus text 16A.

WATER UNDER THE SAHARA

Below the arid surface of the great desert are huge natural reservoirs of water. These resources are now beginning to be studied and exploited for the benefit of the Sahara nations.

At the center of the "arid zone" in the lower latitudes is the great desert of the Sahara. Its area is some 3,089,000 square miles; the area of the entire U.S. is not much larger. It stretches across North Africa for 3,000 miles from the Atlantic Ocean to the Red Sea. (Indeed, the desert continues beyond the Red Sea into Arabia, but that part of it is not called the Sahara.) Geographically the Sahara constitutes a complete break between the lands of Africa that lie along the Mediterranean Sea and the rest of the continent.

Except where the Sahara meets the Red Sea and the Atlantic, its boundaries are somewhat imprecise. They coincide approximately with the contour line that traces out the areas with an average annual rainfall of 100 millimeters (about four inches). Within these limits the rainfall can be as little as 25 millimeters a year. The rainfall is notably irregular; sometimes a large region will have no precipitation for 10 years and then the region may have several rainstorms in a year. In summer the daytime temperature is often as high as 120 degrees Fahrenheit in the shade.

In the light of the fact that the only source of water for an aquifer is rainfall, which either percolates directly into the aquifer or reaches it indirectly through streams, the existence of substantial stores of water in Saharan aquifers at first seems a paradox. The explanation is geological. Most of the water now in the aquifers was laid down in past millenniums during pluvial periods when the Sahara had substantially more rainfall than it does now. Even today, however, the aquifers are recharged to a considerable extent by rain falling at the periphery of the desert.

The groundwater of the Sahara is to be found mainly in seven major basins, each virtually a closed hydrologic system. Although each of these basins has individual characteristics, the basins also have much in common in their geology in the crucial question of recharge and in the problems of development.

The major aquifers are found in three kinds of formation, two of which are geologic series: a related group of rocks formed in a particular period or epoch. One of the series is the main geologic feature underlying the Sahara: a sandstone series that recent oil explorations have shown to be of lower Cretaceous age. This sandstone, which in many places is interbedded with shale and marl, is more than 1,000 meters thick and rests on Paleozoic or Precambrian rocks that are impervious to water. The French name for it is the Continental Intercalate; the English, the Nubian sandstone. It constitutes an excellent aquifer.

Overlying this sandstone series is a limestone and marl series of marine

origin, dating from periods when much of the Sahara was under water. About 1,000 meters thick, it is of upper Cretaceous lower Eocene age and almost impervious to water. Above it lies the second major aquifer formation: a sandstone series of Miocene-Pliocene age. This series, also about 1.000 meters thick, is called the Continental Terminal and represents the second important aquifer of the Sahara. The third class of aquifer is represented by sand dunes, riverbeds and other surface formations dating from the Pleistocene and Recent epochs.

Water occupies an aquifer under one or the other of two distinctly different conditions. If it is overlain by an impermeable stratum, it is likely to be under pressure that will cause the water to rise above the top of the aquifer when the aquifer is penetrated by a well. This is the condition described as artesian, the term is used whether or not the water rises high enough to flow at ground level. A large part of Saharan groundwater is under artesian conditions. If the water in an aquifer is not confined by an overlying impermeable stratum, it is said to be under water table conditions. Such water is not under pressure and can be extracted only by pumping or gravitational flow through underground canals.

Groundwater is seldom immobile in an aquifer. Artesian water in particular is likely to move over considerable distances from a recharge area. This movement is attributable to gravity . In the Sahara evaporation is also a powerful mechanism of vertical movement: it operates as a huge pump to lower the head of the groundwater.

Accordingly the question of greatest interest in the modern exploitation of Sahara groundwater is what kind of recharge was occurring some 2,000 years ago. For this purpose the technique of radioactive dating has recently been applied. The technique is based on the groundwater's content of tritium, carbon 14 or naturally occurring isotopes of uranium and thorium. Natural tritium is suitable for dating relatively young groundwater, with an age of less than 100 years, while carbon-14 dating is suitable for dating older groundwater. The results so far, however, are somewhat inconclusive, partly for the lack of sufficient data and partly because the uncertainty in the determination of an age can range from 1,300 to 5,700 years as a result of the fact that the water in the Nubian sandstone has a small content of carbon. The sources of the carbon are dissolved carbonate, carbon dioxide in the air and plant carbon from the decay of organic matter in the soil.

Thus, groundwater is the key to any development effort in the Sahara. If development is to be planned and executed soundly, it should be preceded by a survey of groundwater resources on a Sahara-wide scale. Such a survey would take into account the geographical distribution of the water and the need for equitable treatment of its users regardless of political boundaries

VI. Comprehension check

Activity 1. Do the false/true activity

1. At the center of the "arid zone” in the lower latitudes is the great desert of the Sahara.

2. A large part of Saharan groundwater is under artesian conditions.
3. Groundwater is often immobile in an aquifer.
4. Artesian water moves over considerable distances from a recharge area.
5. Groundwater is the key to any development effort in the Sahara.

Activity 2. Look through text 16A. Then complete the following to make suitable sentences according to the meaning of the text.

1. Resources are now beginning to be studied and exploited_____ .
2. Water under table conditions is not under pressure and _____ .
3. Radioactive dating has recently been applied to _____.
4. Carbon-14 dating is suitable for dating _____ .
5. Groundwater is the key to _____ .

VII. Discussion

Activity 1. Define the logical parts of text 16A entitling each of them.
Activity2. Work in pairs . Ask and answer the questions on text 16A.
Activity 3. Translate in writing and reproduce.

Не секрет, що південно-східній частині України наразі загрожує опустелювання, що тягне за собою деградацію значних площ сільськогосподарських угідь та втрату їх для економіки України. На превеликий жаль, причиною опустелювання є не лише зміна кліматичних умов, а і несвідома діяльність людини. Внаслідок неправильної агротехнічної практики на багатьох полях після збирання зернових хлібороби випалюють стерню. Спалювання стерні на полях нерідко стає причиною вигоряння прилеглих до агроугідь лісосмуг. Зникнення лісосмуг, які на даному етапі вже значною мірою втрачені, призводить до вітрової ерозії, вивітроювання, пилових буранів та опустелювання плодородних українських земель. Більше того, починаючи з 2008 року вперше в Україні з’явилась тенденція до самовільного спалювання лісосмуг. Люди свідомо підпалюють захисні лісосмуги, лісопосадки та навіть ділянки лісу. Після того, як насадження пошкоджуються вогнем, їх можна безперешкодно вирубати на дрова або продаж. Деревина при цьому лишається, як правило, неушкодженою. Подекуди на трасах навіть виникли пункти стихійного продажу горілої деревини. На даному етапі таким чином знищено десятки тисяч кілометрів вітрозахисних лісосмуг.

Проте, цей процес має бути зупинений. Зробити це можна лише шляхом запровадження невідкладних заходів з відновлення мережі лісосмуг.

Таким чином, ми маємо можливість зупинити порушення міжнародного та українського законодавства щодо охорони біорізноманіття та, одночасно вжити рішучих заходів щодо боротьби з опустелюванням.

YIII. Skim text 16B and get ready to speak about distribution of deserts in the world.

Text 16 B.

Distribution of Deserts

The location of most deserts is related to descending air. The equator receives the sun's heat more directly than the rest of the earth. Air warms and rises at the equator, then moves both northward and southward to sink near 30° North latitude and 30° South latitude. The world's largest deserts lie beneath these two belts of sinking air.

Air sinking down through the atmosphere is compressed by the weight of the air above it. As air compresses, it warms up; and as it warms, it is able to hold more water vapor. Evaporation of water from the land surface into the warm, dry air is so great under belts of sinking air that moisture seldom falls back to earth in the form of rain. The two belts at 30° North and South latitude characteristically have clear skies, much sunshine, little rain, and high evaporation.

In contrast to the belts at 30°, the equator is marked by rising air masses. The rising air expands and cools as it rises. In cooling, the air loses its moisture, causing cloudy skies and heavy precipitation. Thus a belt of high rainfall at the equator separates the two major belts of deserts. Not all deserts lie on the 30° latitude belts. Some of the world's deserts are the result of the rain shadow effect of mountain ranges. As moist air is forced up to pass over a mountain range, it expands and cools, losing moisture as it rises. The dry air coming down the other side of the mountain compresses and warms, bringing high evaporation with little or no rainfall to the downwind side of the range. This dry region downwind of mountains is the *rain shadow zone.* Parts of the southwestern United States desert in Nevada and northern Arizona are largely the result of the rain shadow effect of the Sierra Nevada range in eastern California.

Great distance from the ocean is another factor that can create deserts, since most rainfall comes from water evaporated from the sea. The dry climate of the large arid regions in China, well north of 30° North latitude, is due to their location in a continental interior and to the rain shadow effect of mountains such as the Himalayas.

Deserts also tend to develop on tropical coasts next to *cold ocean currents.* Cold currents run along the western edges of continents, cooling the air above them. The cold marine air warms up as it moves over land, causing high evaporation and little rain on the coasts. This effect is particularly pronounced on the Pacific coast of South America and the Atlantic coast of Africa.

IX. Long-term project work.

Prepare projects on the following topics:

1. Some characteristics of deserts
2. Expansion of deserts.
3. Drought accelerates desertification.

TEST-CONTROL FOR MODULE 8

Task I. Максимальна кількість балів: 10 (Total 10)
Choose the correct word to complete the sentences.

1. The greenhouse effect … the life on the Earth.

A) will alter	C) have altered
B) altered	D) was altered

2. She was only pretending …, she was really daydreaming.

A) reading	C) have read
B) to read	D) will read

3. The accident is believed … by reckless driving.

A) to cause	C) to be caused
B) will cause	D) to have been caused

4. I want him … my house and never …

A) left/come back	C) to leave/come back
B) leave/will come back	D) will leave/coming back

5. Man is said … the wheel about ten thousand years ago.

A) to have invented	C) was invented
B) to invent	D) will be invented

Task II. Total 20
Give English or Ukrainian equivalents for the following.

1. зворотній зв'язок
2. той, що був виставлений, показаний
3. спірний
4. розповсюджений по всьому світі.
5. невпевненість, нерішучість
6. танути, плавитися
7. tiny
8. air-polution sources
9. aquatic ecosystems
10. acidified lakes
11. Цей костюм сидить на Вас чудово
12. Капелюх Вам личить.
13. Той колір занадто світлий.
14. Воно Вам саме в пору.
15. It's a bargain.
16. It's in great demand now.
17. It's worth buying.
18. Те, що треба

19.Ви можете зняти мірку.
20.It’s too expensive.

Task III. Total 15
Compose tree questions to each sentence.

1. The amount of carbon dioxide in the atmosphere is increasing chiefly because of the burning of the fossil fuels. (Common)
2. Sunlight enters a greenhouse through the glass or plastic. (Common)
3. Global warming has become a major scientific and political issue for the last several decades. (Common)
4. These gases include carbon dioxide, ozone and water vapor. (Common, disjunctive)
5. The polar icecaps will start to melt and the oceans will expand as more snow and ice melt. (Common)

Task IV. Total 25
Use correct prepositions, translate them and compose 5 sentences with them using Infinitive Participle..

1. to succeed …

A) in	C) with
B) of	D) about

2. to result …

A) on	C) in
B) with	D) at

3. to enter …

A) at	C) into
B) in	D) ———

4. to go … sport

A) on	C) with
B) in for	D) at

5. to be crazy …

A) in	C) of
B) about	D) on

6. to be interested …

A) at	C) of
B) with	D) in

7. to care …

A) in	C) about
B) for	D) on

8. to be keen …

A) on	C) at
B) in	D) of

9. to lead …

A) to	C) into
B) ——	D) in

10.to face …

A) in	C) ——
B) through	D) out

Task V. Total 15
Translate into English.

1. Підвищення температури може призвести до танення льодовиків, розширення океанів, підвищення рівня моря.
2. У 1930 році Англія ініціювала програму зі зменшення забруднення повітря.
3. Чим Ви захоплювались коли були студентом?
4. Ці пророкування базуються на комп'ютерних моделях клімату.
5. Середнє збільшення температури може призвести до глобальної катастрофи.

Task VI. Total 15
Translate the following text into Ukrainian.

The Rainforests

The richest and most productive biological communities in the world are in the tropical forests. These forests have been reduced to less than half of their former extent by human activities and now cover only about 7 percent of the earth's land area. In this limited area, however, live about two-thirds of the vegetation mass and about half of all living species in the world!

The largest, lushest, and most biologically diverse of the remaining tropical moist forests are in the Amazon River basin of South America, the Congo River basin of central Africa, and the large islands of Southeast Asia (Sumatra, Borneo, and Papua New Guinea). Whereas the forests of mainland Southeast Asia, western Africa, and Central America are strongly seasonal, with wet and dry seasons, the South American and central African forests are true rainforests. Rainfall is generally more than 400 cm (160 in) per year and falls more or less evenly throughout the year. It is said that such rainforests "make their own rain" because

about half the rain that falls in the forests comes from condensation of water vapor released by transpiration from the trees themselves. Rainforests at lower elevations are hot and humid year-round. At higher elevations, tropical mountains intercept moisture-laden clouds, so the forests that blanket their slopes are cool, wet, and fog-shrouded. They are aptly and poetically called "cloud forests."

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PART II. ADDITIONAL READING

Text 1.

Read the text, define the key words and write abstracts both in English and Ukrainian.

ECOLOGY

The subject matter of ecology is normally divided onto four broad categories: physiological ecology, having to do with the response of single species to environmental conditions such as temperature or light; population ecology, usually focusing on the abundance and distribution of individual species and the factors that cause such distribution; community ecology, having to do with the number of species found at given location and their interactions; and ecosystems ecology, having to do with the structure and function of the entire suite of microbes, plants, and animals, and their abiotic environment, and how the parts interact to generate the whole. This branch of ecology often focuses on the energy and nutrient flows of ecosystems, and when this approach is combined with computer analysis and simulation we often call it systems ecology. Evolutionary ecology, which may operate at any of these levels but most commonly at the physiological or population level, is a rich and dynamic area of ecology focusing on attempting to understand how natural selection developed the structure and function of the organisms and ecosystems at any of these levels.

Ecology is usually considered from the perspective of the specific geographic environment that is being studied at the moment: tropical rain forest, temperate grassland, arctic tundra, benthic marine, the entire biosphere, and so on. Thus you

might study the population ecology of lions in an African savanna, an ecosystems study of a marine benthic environment, global nutrient budgets, and so on. The subject matter of ecology is the entire natural world, including both the living and the non living parts. Biogeography focuses on the observed distribution of plants and animals and the reasons behind it. More recently ecology has included increasingly the human-dominated world of agriculture, grazing lands for domestic animals, cities, and even industrial parks. Industrial ecology is a discipline that has recently been developed, especially in Europe, where the objective is to follow the energy and material use throughout the process of, e.g., making an automobile with the objective of attempting to improve the material and energy efficiency of manufacturing. For any of these levels or approaches there are some scientists that focus on theoretical ecology, which attempts to derive or apply theoretical or sometimes mathematical reasons and generalities for what is observed in nature, and empirical ecology, which is concerned principally with measurement. Applied ecology takes what is found from one or both of these approaches and uses it to protect or manage nature in some way. Related to this discipline is conservation biology. Plant ecology, animal ecology, and microbial ecology have obvious foci. There are usually four basic reasons given to study and as to why we might want to understand ecology: first, since all of us live to some degree in a natural or at least partly natural ecosystem, then considerable pleasure can be derived by studying the environment around us. Just as one might learn to appreciate art better through an art history course so too might one appreciate more the nature around us with a better understanding of ecology. Second, human economies are in large part based on the exploitation and management of nature. Applied ecology is used every day in forestry, fisheries, range management, agriculture, and so on to provide us with the food and fiber we need. For example, in Argentina in many circles there is no difference between ecology and agriculture, which is essentially the ecology of crops and pastures. Third, human societies can often be understood very clearly from an ecological perspectives as we study, for example, the population dynamics (demography) of our own species, the food and fossil energy flowing through our society. Fourth, humans appear to be changing aspects of the global environment in many ways. Ecology can be very useful to help us understand what these changes are, what the implications might be for various ecosystems, and how we might intervene in either human economies or in nature to try to mitigate or otherwise alter these changes. There are many professional ecologists, who believe that these apparent changes from human activities have the potential to generate enormous harm to both natural ecosystems and human economies. Understanding, predicting and adapting to these issues could be the most important of all possible issues for humans to deal with. In this case ecology and environmentalism can be the same.

Text 2.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Global Forecast for the 21st Century

Average global temperatures are anticipated to warm by somewhere between 1.5°C and 6.8°C from 2000 to 2100, depending on human activities. These changes will not be uniform, although no regions are expected to cool. Landmasses will warm more than the oceans, and Arctic regions will warm more than other parts of the world, perhaps by as much as 8°C or 9°C above 1975 temperatures. This will melt more of the northern ice and snow pack, thereby decrease albedo of these regions, and accelerate warming.

Sea ice in the polar oceans is melting and may disappear entirely during summer months. This will shorten sea routes, say, from Europe and the east coast of the United States to China. It will also make more accessible some natural resources such as oil deposits in the Arctic seabed. Sea level is predicted to rise as higher temperatures expand the volume of ocean waters and melt the snow and ice situated on landmasses, particularly Greenland and Antarctica. Over 20 different GCMs predict that the sea level will rise by 0.2 m to 0.5 m from 2000 to 2100. These models usually assume that glaciers will keep flowing (moving) at their current speed. Recent observations in Greenland have shown that glacial flows are accelerating. The likely mechanism is that as temperatures increase, the ice along the edges of a glacier melts. This water makes it way to the bottom of the glacier and acts as a lubricant that accelerates the ice flow. An alternative forecast, which takes this phenomenon into account, predicts an even greater change in sea level: the sea level in 2100 will be 0.5 m to 1.2 m higher than in 2000. A rising sea level will put coastal regions of the world at great risk. Cities with large populations, such as those along the Gulf and East coasts of the United States, will be inundated. Bangladesh, one of the world's poorest yet most populous countries, is perhaps the most vulnerable to sea-level changes: about 80% of this country is below 10 m in elevation, and so a 0.5 m to 1.0 m rise in sea level will permanently flood between 6% and 10% of its land area and displace between 3.4 million and 17 million people. In addition to worldwide flooding, the rising sea level may contaminate the freshwater supplies of many coastal regions with seawater.

Global warming will promote greater evaporation of water from Earth's surface; therefore, global precipitation should increase on average. In particular, polar and equatorial regions are likely to become wetter. The mid-latitudes, however, will become drier, especially areas that are already deserts.

Hotter and drier weather at the mid-latitudes will foster more frequent and more severe forest fires. Forests in the western United States contain from 20% to 40% of the carbon sequestered in the vegetation of the entire country. Fires might turn these forests into sources of additional CO2 that further accelerate global warming, rather than sinks that mitigate it. Clearly, more intensive management of these lands will become necessary.

Higher temperatures and lower precipitation at mid-latitudes will also decrease the snowpack in many mountain ranges. For example, the Sierra Nevada Mountains in

California may receive from 30% to 90% less snow by the year 2100. Also, only about one-third of the ski resorts in Europe will have reliable snow by 2100. Finally, even in areas where precipitation does not change significantly, the amount of water available to living organisms, lakes, and rivers will decrease because at higher temperatures, more water will be lost to evaporation.

As CO_2 concentrations in the atmosphere increase by 50% to 300% during this century, more CO_2 will dissolve in the oceans and form carbonic acid. This carbonic acid dissociates in water to release a proton and bicarbonate. Higher atmospheric CO_2 concentrations and warmer temperatures increase proton concentrations in the oceans (i.e., lower the pH), and oceans are thereby becoming more acidic. Simulations on GCMs affirm this trend. They indicate that the oceans in preindustrial times were more alkaline, with a pH of 8.25 (a pH of 7.0 is neutral); they dropped to pH 8.15 by around 1994; and they are expected to reach pH 7.85 by 2100. The pH scale is logarithmic, so a shift in ocean pH from 8.25 to 7.85 means a 250% increase in proton concentrations, a change that will have a strong effect on sea life.

Warmer sea surface temperatures and cooler stratospheric temperatures accentuate the temperature gradients that empower major storms. Consequently, major storms are increasing in intensity. This, together with the rising sea level, exacerbates storm surges and threatens coasts adjacent to warm ocean currents. Projections about the frequencies of major storms, however, remain uncertain because of the complex nature of storm formation and will require additional data and fine-resolution modeling.

Text 3.

Read the text, define the key words and write abstracts both in English and Ukrainian.

What do you think? Chernobyl: The Worst Possible Accident?

In the early morning hours of April 26, 1986, residents of the Ukrainian village of Pripyat saw a spectacular and terrifying sight. A glowing fountain of molten nuclear fuel and burning graphite was spewing into the dark sky through a gaping hole in the roof of the Chernobyl Nuclear Power Plant only a few kilometers away. Although officials assured them that there was nothing to worry about in this "rapid fuel relocation," the villagers knew that something was terribly wrong. They were witnessing the worst possible nuclear power accident, a "meltdown" of the nuclear fuel and rupture of the containment facilities, releasing enormous amounts of radioactivity into the environment.

The accident was a result of a risky experiment undertaken by the plant engineers in violation of a number of safety rules and operational procedures. They were testing whether the residual energy of a spinning turbine could provide enough power to run the plant in an emergency shutdown if off-site power were lost." Reactor number four had been slowed down to only 6 percent of its normal operating level. To conserve the small amount of electricity being generated, they

then disconnected the emergency core-cooling pumps and other safety devices, unaware that the reactor was dangerously unstable under these conditions.

The heat level in the core began to rise, slowly at first, and then faster and faster. The operators tried to push the control rods into the core to slow the reaction, but the graphite pile had been deformed by the heat so that the rods wouldn't go in. In 4.5 seconds, the power level rose 2,000-fold, far above the rated capacity of the cooling system. Chemical explosions (probably hydrogen gas released from the expanding core) ripped open the fuel rods and cooling tubes. Cooling water flashed into steam and blew off the 1,000-ton concrete cap on top of the reactor. Molten uranium fuel puddled in the bottom of the reactor, creating a critical mass that accelerated the nuclear fission reactions. The metal superstructure of the containment building was ripped apart and a column of burning graphite, molten uranium, and radioactive ashes billowed 1,000 m (3,000 ft) into the air.

Panic and confusion ensued. Officials first denied that anything was wrong. The village of Pripyat was not evacuated for 36 hours. There was no public announcement for three days. The first international warning came, not from Soviet authorities, but from Swedish scientists 2,000 km away who detected unusually high levels of radioactive fallout and traced air flows back to the southern Soviet Union.

There were many acts of heroism during this emergency. Firefighters climbed to the roof of the burning reactor building to pour water into the blazing inferno. Engineers dived into the suppression pool beneath the burning core to open a drain to prevent another steam explosion. Bus drivers made repeated trips into the contaminated area to evacuate nearby residents. Helicopter pilots hovered over the gaping maw of the ruined building to drop more than 7,000 tons of lead shot, sand, clay, limestone, and boron carbide onto the burning nuclear core to smother the fire and suppress the nuclear fission reactions. The main fire was put out within a few hours, but the graphite core continued to smolder for weeks. It wasn't finally extinguished until tunnels were dug beneath the reactor building and liquid nitrogen was injected under the core to cool it.

A 10-km zone (6.25 mi) around the plant was evacuated first. Later, it was expanded to 30 km (18 mi). Altogether, more than 1 35,000 people were evacuated from seventy-one villages in the immediate area, and 250,000 children from Kiev, 80 km (50 mi) to the south, were sent on an "early summer holiday." Several hundred people were hospitalized for radiation sickness. Thirty-one people are officially reported to have died from direct effects of radiation. Critics claimed that the total was ten times higher.

The amount of radioactive fallout varied from area to area, depending on wind patterns and rainfall. Some places had heavy doses while neighboring regions had very little. One band of fallout spread across Yugoslavia, France, and Italy. Another crossed Germany and Scandinavia. Small amounts of radiation even

reached North America. Altogether, about 7 tons of fuel containing 50 to 100 million curies were released, roughly 5 percent of the reactor fuel.

Assessments of the long-term effects of this accident differ-widely. The U.S. Department of Energy estimates that between 400 and 28,000 cancer deaths will occur in the Northern Hemisphere in the next 50 years as a result of Chernobyl. With 30 million cancer deaths expected from all causes in the next 50 years, however, even 28,000 extra deaths probably will not be statistically significant or detectable.

Some scientists criticize these calculations, pointing out that iodine-131 and cesium-137 are taken up by plants and accumulated by animals.

Text 4.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Noise

Every year since 1973, the U.S. Department of Housing and Urban Development has conducted a survey to find out what city residents dislike about their environment. And every year the same factor has been named most objectionable. It is not crime, pollution, or congestion; it is noise – something that reaches every part of the city every day.

We have known for a long time that prolonged exposure to noises, such as loud music or the roar of machinery, can result in hearing loss. Evidence now suggests that noise-related stress also causes a wide range of psychological and physiological problems ranging from irritability to heart disease. An increasing number of people are affected by noise in their environment. By age 40, nearly everyone in America has suffered hearing deterioration in the higher frequencies. An estimated 10 percent of Americans (24 million people) suffer serious hearing loss, and the lives of another 80 million people are significantly disrupted by noise.

What is noise? There are many definitions, some technical and some philosophical. What is music to your ears might be noise to someone else. Simply defined, noise pollution is any unwanted sound or any sound that interferes with hearing, causes stress, or disrupts our lives. Sound is measured either in dynes, watts, or decibels. Note that decibels (db) are logarithmic; that is, a 10 db increase represents a tenfold increase in sound energy.

City noises come from many sources. Traffic is generally the most omnipresent noise. Cars, trucks, and buses create a roar that permeates nearly everywhere in the city. Near airports, jets thunder overhead, stopping conversation, rattling dishes, sometimes even cracking walls. Jackhammers rattle in the streets; sirens pierce the air; motorcycles, lawnmowers, snowblowers, and chain saws create an infernal din; and music from radios, TVs, and loudspeakers fills the air everywhere.

The sensitivity and discrimination of our hearing is remarkable. Normally, humans can hear sounds from 16 hertz to 20,000 hertz (cycles per second). A

young child whose hearing has not yet been damaged by excess noise can hear the whine of a mosquito's wings at the window when less than one quadrillionth (1 x $10^{\sim 15}$) of a watt per cm^2 is reaching the eardrum.

Prolonged exposure to sounds above about 90 decibels can permanently damage the sensitive mechanism of the inner ear. By age 30, most Americans have lost 5 db of sensitivity and can't hear anything above 16,000 Hertz (Hz); by age 65, the sensitivity reduction is 40 db for most people, and all sounds above 8,000 Hz are lost. By contrast, in the Sudan, where the environment is very quiet, even 70-year-olds have no significant hearing loss.

Extremely loud sounds – above 1 30 db, the level of a loud rock band or music heard through earphones at a high setting – actually can destroy sensory nerve endings, causing aberrant nerve signals that the brain interprets as a high-pitched whine or whistle. You may have experienced ringing ears after exposure to very loud noises. Coffee, aspirin, certain antibiotics, and fever also can cause ringing sensations, but they usually are temporary.

A persistent ringing is called tinnitus. It has been estimated that 94 percent of the people in the United States suffer some degree of tinnitus. For most people, the ringing is noticeable only in a very quiet environment, and we rarely are in a place that is quiet enough to hear it. About thirty-five out of one thousand people have tinnitus severely enough to interfere with their lives. Sometimes the ringing becomes so loud that it is unendurable, like shrieking brakes on a subway train. Unfortunately, there is not yet a treatment for this distressing disorder.

Text 5.

Read the text, define the key words and write abstracts both in English and Ukrainian.

What to Do with Household Hazardous Wastes

Pesticides, cleaners, spot removers, disinfectants, dead batteries, paints, hobby supplies, glue, automotive products – these are just a few of the many dangerous toxic and hazardous materials in our homes. Look in storage areas around your house and you will probably find a plethora of unused and un-needed harmful or hazardous products. It's not good for you or the environment to keep all this stuff around if you don't need it anymore. But what to do with it? It is generally illegal – and certainly immoral – to dump it outside or put it into your household trash. What are our alternatives?

The first rule is to produce less waste in the first place. Buy only what you need for the job at hand rather than the large economy size, much of which will be thrown away later. Use up the last little bit or share leftovers with a friend or neighbor. If you have half a can of paint left, it's better to put it on your wall than to dispose of it in liquid form. Did you know that the gallon of paint that you bought

at the hardware store for $9.99 will cost an equal amount to dispose of as a hazardous waste?

Many common materials that you probably already have make excellent, nontoxic alternatives to expensive commercial products. Vinegar, for instance, is a good chrome or window cleaner. Lemon juice and salt will clean copper. Baking soda is an excellent cleaner and odor remover; use it to clean your oven, pots and pans, silverware, toilet, tub, and sink or to remove odors from clothes, refrigerators, or carpets. For clogged drains, use a plunger or mechanical snake rather than caustic acids or bases. Lemon, almond, or olive oils make good furniture polish. Mix them with mineral oil if you want a thinner, penetrating polish.

Choose less toxic products. Avoid solvent-containing products labeled flammable, combustible, or explosive. Water-based or latex adhesives or paints are generally safer for you and the environment than oil or solvent-based products. Rather than buying harsh chemical paint strippers, try sandpaper, a scraper, or a heat gun. Use paint to protect wood rather than toxic chemical preservatives. Use a pump or roll-on to apply cleaning and grooming products rather than aerosol versions. Dig out dandelions by hand – or learn to appreciate their cheerful yellow flowers and tenacious personality – rather than apply chemical herbicides.

Even the most responsible shopper occasionally ends up with toxic or hazardous materials that she or he can't use. What to do with residual stuff? If your community lacks these programs, try to get them established. Notice that many water-soluble materials can be safely flushed down the drain – using plenty of water – if you are hooked up to a municipal sanitary sewer system. Don't dump these materials down a storm sewer or into a septic system. Don't mix materials together – especially if they contain bleach and ammonia – because a toxic gas can form. Label materials clearly. Think of the workers at the collection station who would like to know what they are handling and what they should do with it. Take materials to the collection site in sturdy, nonleaking containers, both for your sake and that of those who will be handling them.

Text 6.

Read the text, define the key words and write abstracts both in English and Ukrainian.

The Greens

In all Western countries, the growing environmental movement has been an important political development over the past 20 years. Numerous environmental organizations have been created. Indeed, not just Western nations but virtually all countries now have environmental organizations that are helping to shape the perspective of governments on environmental issues.

As environmental organizations have developed, they have focused the question whether to work with existing political parties or to create their own. While organizations in the United States generally work through existing

structures, in West Germany, a new political party – the Greens – is closely identified with the environmental agenda. As distinguished from environmental organizations, the need for a "Green" party is not evident in every country. Nevertheless, the German Greens has been modeled in many countries, so that it is possible to speak of a "Green phenomenon."

In the West German elections in April 1983, the Green Party gained international attention by breaking through the 5 percent vote barrier of the nation's proportional representation system and placing 27 people in the national parliament. Since then, Greens in seven other Western European countries have entered parliament with between 5 and 8 percent of the vote, and Greens have a voice in the all-European parliament that meets in Strasbourg.

In the early summer of 2000, Greens in Great Britain astounded the experts, and themselves, by getting 15 percent of the vote, a figure that unfortunately for them does not translate into parliamentary representation, given the simple majority, winner-take-all system in that country. There are organized Green political tendencies in Poland, Hungary, and the former Soviet Union. Japan has a small but very vigorous Green Party, as do Australia, Brazil, and Canada.

While Greens exist in the United States and Canada, there is little sign that they will be able to elect representatives in significant numbers. They are ultimately victims of the political system within which they work. Also, the need for a specifically Green Party is arguably less in North America than elsewhere because of a strong tradition of freedom of association and the corresponding characteristic for forming political interest and pressure groups. Thus, environmental issues are pushed by a long list of local pressure groups and by strong national environmental lobbies. If the Greens continue to grow in Western Europe, there may come a time when they will also become a significant political force in North America.

Text 7.

Read the text, define the key words and write abstracts both in English and Ukrainian.

El Nino

What do sea surface temperatures near Indonesia, anchovy fishing off the coast of Peru, and the direction of tropical trade winds have to do with rainfall and temperatures over the midwestern United States? Strangely enough, they all may be interrelated. If the terms El Nino, La Nina, and Southern Oscillation are not yet a part of your vocabulary, perhaps they should be. They describe a connection between the ocean and atmosphere that appears to affect these factors as well as weather patterns throughout the world.

The core of this climatic system is a huge pool of warm surface water in the Pacific Ocean that sloshes slowly back and forth between Indonesia and South America like water in a giant bathtub. Most years, this mound of warm water is held in the western Pacific by steady equatorial trade winds pushing ocean surface

currents westward. These surface winds are generated by a giant low-pressure cell formed by convection currents of moist air warmed by the ocean. Towering thunderheads created by rising air bring torrential summer rains to the tropical rainforests of Northern Australia and Southeast Asia. Winds high in the troposphere carry a return flow back to the eastern Pacific where dry subsiding currents create deserts from Chile to southern California. Surface waters driven west-ward by the trade winds are replaced by upwelling of cold, nutrient-rich, deep waters off the west coast of South America that support dense schools of anchovies and other finfish.

Every three to five years, for reasons that we don't fully understand, the Indonesian low collapses and the warm mass of surface waters surges back east across the Pacific. One theory is that the high cirrus clouds atop the cloud columns absorb enough solar radiation to cool the ocean surface and reverse trade winds and ocean surface currents so they flow eastward rather than westward. Another theory is that eastward-flowing deep currents called baroclinic waves periodically interfere with coastal upwelling, warming the sea surface off South America and eliminating the temperature gradient across the Pacific. At any rate, the shift in position of the tropical depression sets off a chain of events lasting a year or more with repercussions in weather systems across North and South America and perhaps around the world.

Peruvian fishermen were the first to notice irregular cycles of rising ocean temperatures that resulted in disappearance of the anchovy schools on which they depended. They named these events El Nino (Spanish for the Christ child) because they often occur around Christmas time. We have come to call the intervening years La Nina (or little girl). Together, this cycle is called the EL Nino Southern Oscillation (ENSO).

How does the ENSO cycle affect us? During an El Nino year, the northern jet stream – which normally is over Canada – is drawn south over the United States. This pulls moist air from the Pacific and Gulf of Mexico inland, bringing intense storms and heavy rains from California across the midwestern states. The intervening La Nina years bring hot dry weather to these same areas. An unusually long El Nino event, from 1991 to 1993 broke the seven-year drought over the western United States and resulted in floods of the century in the Mississippi Valley. Oregon, Washington, and British Columbia, on the other hand, tend to have warm, sunny weather in El Nino years rather than their usual rain. Severe droughts in Australia and Indonesia during an El Nino episode in 1982 and 1983 caused disastrous crop failures and forest fires, including one in Borneo that burned 3.3 million hectares (8 million acres). There may even be a connection between monsoon patterns across Africa or South Asia and ENSO periodicity.

Are ENSO events becoming stronger or more irregular because of global climate change? Scientists are reluctant to speculate, but one effect of increasing sea surface temperatures is clearly to bring bigger and more violent storms. On the other hand, the cooling effect of ENSO clouds may act as a safety valve to regulate

global climate. In either case, it appears that ENSO patterns are important factors in global as well as local weather and something to which we should pay attention.

Text 8.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Permafrost

A soil is considered permafrost if its temperature remains permanently below the melting point of water for at least two years. Such permafrost soil is ubiquitous in high latitude (e.g. in Siberia, Alaska and the Antarctic) but can also be found in mountainous areas at lower latitudes. Typically, the below-ground temperature will be less variable from season to season than the air temperature, with temperatures tending to increase with depth.

Permafrost typically occurs during glacial periods. The thickness of a permafrost layer can reach from a few decimetres to well over one kilometre, while it may extend in area from small patches of a few tens of square metres to thousands of square kilometres. Since our present glacial period is considered an interglacial within the fifth Ice age there are presently large areas of the Earth that are classified as permafrost. Permafrost formation may be considered a positive feedback loop for either global cooling or global warming cycles, based upon limited experimental observations.

Discontinuous permafrost occurs in the following scenario:If the mean annual air temperature is only slightly below 0°C, permafrost will form only in sheltered locations. Normally, permafrost is discontinuous only in microclimates where the mean annual soil surface temperature is between freezing and -5°C. In the moist-wintered areas, there may not be even discontinuous permafrost down to -2°C Extensive discontinuous permafrost is a subset of discontinuous permafrost, in which permafrost covers between 50 and 90 percent of the terrain; this circumstance characteristically occurs where mean annual temperatures range between -2 and -4°C. *Sporadic* permafrost is defined as the condition where permafrost cover is less than 50 percent of the areal extent and most often is found at mean annual temperatures between freezing and -2°C. Sporadic permafrost can be considered as a subclass of discontinuous permafrosts. *Continuous* permafrost occurs when the mean annual soil surface temperature remains below -5°C, in which case the influence of aspect cannot overcome the frozen soil.

Subsea permafrost is a frozen seabed condition. Deep permafrost layers are highly persistent, and conversely require a long time scale for formation.The deepest permafrosts such as encountered in the Yukon are approximately 1300 meters in thickness. Formation times for such deep layers are on the order of 100,000 to 500,000 years; in fact, some deep permafrosts are thought to have persisted for the prior two million years. This persistence underscores the fact that, even though the

climatic trend for the past 20,000 years has been an interglacial warming, we are still in the Earth's fifth ice age.
In some world regions of moderate latitude, including parts of central Europe, deep permafrost developed during the Pleistocene persists to depths of several hundred metres. Poland's Suwa?ki deep frozen soils are examples of such persistent frozen depths, even though the surface soils do not qualify as permafrost.It is interesting to note that the presence of a snow pack impedes the growth of permafrost depth, since it insulates the ground from the colder external air.
As permafrost melts methane is released into the atmosphere. This process has been occurring since the last glacial maximum approximately 20,000 years before present. Activities of man beginning in the early Holocene, including deforestation and intensive grazing, have added to this thawing process. Intensified combustion of fossil fuels and intensification of rice farming have also added to greenhouse gas production in the last several centuries. In any case, the release of methane constitutes a re-inforcing feedback loop by the release of more greenhouse gases.
Engineering for structures, roads and pipelines is challenging in permafrost settings. Seasonal thaw depth and the temperature of the frozen ground are key parameters to be addressed in the design of infrastructure in a permafrost environment. Most biogeochemical and hydrological processes in permafrost are confined to the seasonally thawed layer, which varies from tens of centimeters to meters in thickness. These parameters control important cryogenic processes, including creep, thaw settlement, the bond between frozen soil and embedded material, frost heave, and frost jacking (recurring foundation uplift caused by frost heave). Seasonal thaw depth and frozen-ground temperature both depend on soil surface temperature, heat flow from the interior of the earth, snow cover, vegetation and soil characteristics. Projects such as the Trans Alaska Pipeline have required extensive engineering to allow flexible movement of the pipeline to respond to the seasonal freeze thaw cycle.

Text 9.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Electromagnetic Fields and Your Health

Many forms of technology seem scary and mysterious, but few seem as insidious as potential dangers from invisible, unfelt electric and magnetic fields associated with our use of electricity. These fields are generated by power lines, household appliances/video display terminals, or any other device in which electricity flows through a wire or a motor. Although the data are vague and often contradictory, there appears to be some increased risk of cancers, miscarriages, birth defects, and perhaps Alzheimer's disease associated with exposure to these fields. Epidemiological studies generally implicate only the magnetic fields in

human health risks, but most studies use the term electromagnetic field (EMF) because of the difficulty in separating electric and magnetic effects.

The first published report of adverse health effects from EMF was a 1966 study of electrical switchyard workers in the Soviet Union who experienced a variety of symptoms including headaches, fatigue, and reduced fertility. A more alarming study published in 1979 reported that children living near power lines in Denver, Colorado, had two or three times higher rates of childhood leukemia than matched controls. Like the Soviet study, this report was greeted with skepticism because no direct measurement of exposure was available. Instead, researchers estimated field strength based on distance between homes and power lines. Exposure to other possible sources of cancer could not be determined.

These studies have stimulated further research. A survey of workers in power plants or telephone switching stations, for instance, found evidence for breast cancer among both men and women. Analysis of childhood cancer in Los Angeles found links between leukemia and the use of electric hair dryers and black-and-white televisions. Canadian research showed evidence for miscarriages, brain tumors, and birth defects among children whose mothers worked at video display terminals or used electric blankets while pregnant. The statistical significance of these studies is generally weak and they often fail to show clear dose/response relationships expected for a direct and unequivocal link.

In 1992, however, Swedish studies reported that electrical workers and children who live near power lines have twice the normal leukemia rate. This research does show a statistically significant dose/response relationship between field strength and cancer incidence. Similarly, in 1994, a U.S. study showed that breast cancer death rates are twice as high among female telephone installers, repairers, and line workers compared with women who work in nonelectrical occupations. A possible explanation is that sustained EMF exposure causes a decrease in the hormone melatonin and an increase in estrogen levels" in the blood. Elevated, long-term estrogen levels are thought to be associated with breast cancer.

What does this evidence suggest for the average person? First of all, homes and schools should be at least one kilometer away from high-voltage power lines. Electric distribution lines that bring power into homes create much less powerful fields but should still be shielded and routed away from the parts of houses where people spend the most time. An electric blanket generates only minute fields but it lies right on top of you for many hours each night. It might be advisable to use a quilt instead, especially if you are pregnant. People who watch TV or work at a video display terminal (computer screen) for many hours each day should back up at least one meter (three feet) from the screen. Children, especially, should be discouraged from sitting close to TV screens.

Bedside appliances such as electric clocks, telephone answering machines, or anything with an electric motor that runs continuously should be placed at least a meter away from your head. Even better, why not place them across the room? Other electric appliances such as hair dryers, curling irons, electric shavers, can

openers, microwave ovens, etc., should be used as briefly as possible and at the greatest distance from your person as is feasible. Don't stand right in front of the microwave door watching your food cook. Consider using a towel to dry your hair or a non-motorized razor to shave.

We also should keep relative risks in mind. If it is true that cancer risks are doubled by exposure to EMFs, remember that smoking increases cancer risks twenty times. Riding in an automobile, being over-weight, eating a high-fat diet, engaging in unsafe sex, excessive drinking, risky jobs, radon in your home, and stress are all probably much greater threats to your health than EMF. Still, prudent avoidance makes sense; if you can reduce your exposure to EMF at little cost, why not do it?

Text 10.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Electric Car Development

Clean air laws and regulations in countries around the world are providing a significant new push for the commercial development of electric vehicles. The Air Resources Board of the California Environmental Protection Agency voted in early 1996 to reaffirm a requirement of zero emission vehicles. Although they voted to reduce the number of electric vehicles required in the late 1990s, they reaffirmed the requirement that 10 percent of all cars and light duty trucks sold in California in 2003 and thereafter be zero emission vehicles. Electric cars are the only zero emission vehicles currently available. Based on the number of automobiles sold in California, the following companies must comply with the requirement: General Motors, Ford, Chrysler, Mazda, Toyota, Honda, and Nissan. They must provide cars with a 125-mile range between charges, and they must participate in research leading to more efficient batteries. All seven manufacturers currently produce electric vehicles.

Some problems with electric vehicles still need to be resolved. The principal technical problem is the development of lower-cost batteries with faster recharge times, longer durability, and less weight. Another problem is that disposing of the batteries, especially lead-acid batteries, is difficult. There is also concern that electric cars simply shift the pollution to a different place – the power plant.

In fact, the total amount of pollution caused by electric cars is less than that caused by gas-powered cars. Also, it is easier to control pollution from a few stationary sources than from millions of mobile sources. Consequently, electric vehicles are expected to improve air quality. In the future, drivers will need to remember to "plug in" their cars rather than "fill it up."

Text 11.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Lead and Mercury Poisoning

Lead and mercury are naturally present in the environment and probably have been a source of pollution for centuries. For example, the lead drinking and eating vessels used by the wealthy Romans may have caused many of their deaths. In 1865, when Alice in Wonderland was published, one of the characters was the Mad Hatter. At that period in history, mercury was widely used in the treatment of beaver skins for making hats. As a result of exposure to mercury, hat makers often suffered from a variety of mental problems; hence, the phrase "mad as a hatter."

In 1953, a number of physical and mental disorders in the Minamata Bay region of Japan were diagnosed as being caused by mercury: 52 people developed symptoms of mercury poisoning, 17 died, and 23 became permanently disabled. In 1970, an outbreak of mercury poisoning in North America was traced to mercury in the meat of swordfish and tuna. In both incidents, the toxic material was not metallic mercury but a mercurous compound, methylmercury. Metallic mercury is converted to methylmercury by bacteria in the water. Methylmercury enters the food chain and may become concentrated as the result of biological amplification. Sufficient amounts in humans can cause brain damage, kidney damage, or birth defects. Today, regulations reduce the release of mercury into the environment and set allowable levels in foods. The problem still persists, however, because it is impossible to eliminate the large amounts of mercury already present in the environment, and it is difficult to prevent the release of mercury in all cases. For example, burning coal releases 3,200 metric tons of mercury into the earth's atmosphere each year, and mercury is still "lost" when it is used for various industrial purposes.

Like mercury, lead is a heavy metal and has been a pollutant for centuries. Studies of the Greenland Ice Cap indicate a 1,500 percent increase in the lead content today as compared to 800 B.C. These studies reveal that the first large increase occurred during the Industrial Revolution and the second great increase occurred after the invention of the automobile. Oil companies added lead to gasoline to improve performance, and burning gasoline is a major source of lead pollution. There has been a reduction in airborne lead as a result of North America and Europe reducing lead content in gasoline. Another source of lead pollution is older paints. Prior to 1940, indoor and outdoor paints often contained lead.

There is still disagreement over what levels of lead and mercury can cause human health problems. Although ingested lead from paint can cause death or disability, such a strong correlation cannot be made for atmospheric lead.

Text 12.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Tropical Rainforests: Life in Layers

Almost all development In the Amazon involves clearing the land by burning. On a single day in 1988, scientists recorded 6000 "man-made" fires burning in the Amazon. The consequences, to the forest and the world are devastating!

As environmental concerns have shifted focus from local to global, the relationship between the burning of the rain forest and the global warming phenomenon called the "greenhouse effect" is one of the most alarming.

To some extent, the greenhouse effect is a necessary process, keeping the earth warm enough to support life. It works the same way as a gardener's greenhouse does: molecules of carbon dioxide allow the sun's rays to pass through the atmosphere – like they pass through the glass panes – and warm the earth, but the gas traps the heat by absorbing infra-red radiation. (A car works the same the way – that's why it gets so hot inside on a sunny day even if the air temperature is cool.)

Trees felled in the tropics add to environmental warming because carbon is released into the atmosphere when the debris of a felled forest burns or rots. Estimates suggest that one-fifth to one-third of all carbon dioxide pollution comes from tropical forest destruction, but this could rapidly increase if the Amazon rainforest continues to be burned.

Accumulating carbon dioxide is the largest single cause – about 50% – of global warming. Global warming could result in rising sea levels, changes in world-wide weather and wind patterns, floods and droughts.

Chlorofluorocarbons from plastics, aerosols and refrigeration are another major contributing factor to the greenhouse effect.

The richest and most productive biological communities in the world are in the tropical forests. These forests have been reduced to less than half of their former extent by human activities and now cover only about 7 percent of the earth's land area. In this limited area, however, live about two-thirds of the vegetation mass and about half of all living species in the world!

The largest, lushest, and most biologically diverse of the remaining tropical moist forests are in the Amazon River basin of South America, the Congo River basin of central Africa, and the large islands of Southeast Asia (Sumatra, Borneo, and Papua New Guinea). Whereas the forests of mainland Southeast Asia, western Africa, and Central America are strongly seasonal, with wet and dry seasons, the South American and central African forests are true rainforests. Rainfall is generally more than 400 cm (160 in) per year and falls more or less evenly throughout the year. It is said that such rainforests "make their own rain" because about half the rain that falls in the forests comes from condensation of water vapor released by transpiration from the trees themselves. Rainforests at lower elevations are hot and humid year-round. At higher elevations, tropical mountains intercept moisture-laden clouds, so the forests that blanket their slopes are cool, wet, and fog-shrouded. They are aptly and poetically called "cloud forests."

Tropical forests are mostly very old. Unlike temperate forests, they haven't been disturbed by glaciation or mountain building for hundreds of millions of years. This long period of evolution under conditions of ample moisture and stable temperatures has created an incredible diversity of organisms of amazing shapes, colors, sizes, habits, and specialized adaptations.

Habitats in a tropical rainforest are stratified into three to five distinct layers from ground level to the tops of the tallest trees. Let's start at the top. Hundreds of tree species grow together in lush profusion, their crowns interlocking to form a dense, dap-pled canopy about 40 m (1 20 ft) above the forest floor. These unusually tall trees are supported by relatively thin trunks that are reinforced by wedge-shaped buttresses, instead of having thick trunks and deep roots. A few emergent trees rise above the seemingly solid canopy into a world of sunlight, wind, and open space. Numerous species of birds, insects, reptiles, and small mammals live exclusively in the forest canopy, never descending below the crowns of the trees.

The forest understory is composed of small trees and shrubs growing between the trunks of the major trees, as well as climbing woody vines (lianas) and many epiphytes – mainly orchids, bromeliads, and arboreal ferns – that attach themselves to the trees. Some of the larger trees may support fifty to one hundred different species of epiphytes and an even larger population of animals that are specialized to live in the many habitats they create. These understory layers are a world of bright but filtered light abuzz with animal activity.

By contrast, the forest floor is generally dark, humid, quiet, and rather open. Few herbaceous plants can survive in the deep shade created by the layered canopy of the forest trees and their epiphytes. The most numerous animals are ants and termites that scavenge on the detritus raining down from above. A few rodent species gather fallen fruits and nuts. Rare predators such as leopards, jaguars, smaller cats, and large snakes hunt both on the ground and in the understory.

What happens at the soil level? The productivity of a tropical rainforest can be as high as 90 tons per hectare per year, and you might think that the soil that supports this incredible growth is rich and fertile. Instead, however, it is old, acidic, and nutrient poor. Ages of incessant tropical rains and high temperatures have depleted minerals, leaving iron- and aluminum-rich ultisols and oxisols (soils that are old, highly oxidized', and nutrient-poor). Tropical forests have only about 10 percent of their organic material and nutrients in the soil, compared to boreal forests, which may have 90 percent of their organic material in titter and sediments.

The interactions of decomposers and living plant roots in the soil are, literally, the critical base that maintains the rainforest ecosystem. Tropical rainforests are able to maintain high productivity only through rapid recycling of nutrients. As you might suspect, the constant rain of detritus and litter that falls to the ground is quickly decomposed by populations of fungi and bacteria that flourish in the warm, moist environment. Some of these decomposers have symbiotic relationships with the roots of specific trees. Trees have broad, shallow root systems to capitalize on this surface nutrient source; an individual tree might create a dense mat of superficial

roots 100 m in diameter and 1 m thick. In this way, nutrients are absorbed quickly and almost entirely and are reused almost immediately to build fresh plant growth, the necessary base to the trophic pyramid of this incredible ecosystem.

Text 13.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Biodiversity

Biodiversity is the variation in living organisms, viewed within a given habitat, ecosystem or in the world as a whole. The concept is usually applied to the species diversity, although the notion of genetic biodiversity is applied to the variation in genes within an individual species. While most people think of rainforests as loci of great biodiversity, biomes such as oceans and grasslands are the likely repositories for even greater variation. Retention of diverse biota is important, since intact ecosystems are thought to be essential for provision of ecosystem services to humans, including maintenance of a diverse foodbank, pollination, clean water, flood control, pest control, waste decomposition, biomass energy resources and climate stability. Biodiversity is presently critical since we live in the era of the Mass Holocene Extinction, a period of species loss caused by man, and unrivaled in rate of species loss. Although the number of total species numbers in the tens of millions, most have not yet even been described. The extinction of a species is almost always related to destruction of habitat or man-made pollution.

Symbiosis describes close and often long-term interactions between two or more different organisms. The definition of symbiosis has been applied to a wide range of biological relationships, which can be classified mutualism, commensalism, or parasitism. A more narrow definition of symbiosis limits the usage to only interactions from which both organisms benefit, in which case it would be equivalent to mutualism.

Symbiotic interactions may be either obligate, i.e., necessary for the survival of at least one of the organisms involved, or facultative, where the relationship is beneficial but not essential for survival of the organisms. The term symbiosis was first used in 1879 by the mycologist Heinrich Anton de Bary, who termed it "the living together of unlike organisms".

There are two fundamental geometric relationships between the two bionts involved in any given symbiosis: endosymbiosis and exosymbiosis. Endosymbiosis is a relationship in which one symbiont lives within the tissues of the other partner, either within the cells or outside cells. Endosymbiosis is particularly notable in the cladistics of algae. In particular, primary endosymbiosis has involved the capture of a cyanobacterium by a heterotrophic ancestor of the plantae; secondary endosymbiosis likely involved the entrapment of a red or green algae. Tertiary endosymbiosis involves replacement of a plastid from a secondary endosymbiosis with another plastid which was also derived from a secondary endosymbiosis. Other common instance of endosymbiosis include nitrogen-fixing bacteria that live inside root nodules of legume roots; actinomycete nitrogen-fixing bacteria, which

reside in a number of tree and grass root nodules (a widely studied species being sugarcane); and bacterial endosymbionts that provide essential nutrients for large numbers of insect species.
Exosymbiosis, is a counterpart relationship in which the symbiont lives upon the host's body surface, including inner surfaces of the alimentary tract or exocrine gland ducts. Examples include ectoparasites such as ticks, commensal exosymbionts such as light emitting organisms attached to teleost fish, and mutualist ectosymbionts such as cattle egrets.
Mutualism is an interaction between two species in which both benefit. One of the species may be so dependent that it cannot live without its mutualistic partner (obligate mutualism). In some cases, a species can interact mutualistically with more than one partner (diffuse mutualism) or even live without its partner(s) under certain conditions (facultative mutualism). Although all species involved in a mutualistic relationship contribute to the partnership, there is the expectation that each of the symbionts will exhibit a self-interest and thus evolve traits that provide the maximum possible fitness benefit while minimizing biological costs.
Commensalism is a type of symbiosis where one organism benefits, but the other is unaffected.This classification is frequently debated since it is sometimes difficult for researchers to perceive the benefits to one of the commensal partners. The largest class of commensal examples are numerous ordhids, mosses and ferns which grow atop higher plants. In many of these cases the fern or moss recieves benefits of structural support, greater access to sunlight and nutrient supply (e.g. dissolved nutrients dripping down a host tree's bark).
Symbiosis has exerted a prime influence on co-evolution processes, by allowing preferential survival of phenotypes that have superior adaptive response to their symbiont partners. For example angiosperms and the insects that pollinate them have co-evolved to their mutual benefit in adaptation. In particular numerous flowering plants have very specialized inflorescences modified to optimize pollination efficiency. Early flowering plants in the fossil record had simple flowers. Adaptive speciation led to diverse groups of plants, and speciation occurred in parallel within certain insect groups. Some flora developed nectar and large sticky pollen, while insects evolved more specialized features to access and collect these rich food sources. In some cases, co-evolution may lead to a high degree of specialization whereby species are interdependent for surivival.

Text 14.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Antarctic Ice: An 800,000 Year Record of Climate Change

Scientists have recently been able to assemble a continuous 800,000 year record of climate change using ice core samples from Antarctica. This record not only contains information relevant to global temperature changes but also contiguous

information on tends of atmospheric greenhouse concentrations during the same period.

Other scientific sources of information exist that shed light on ancient Earth climate conditions, known as paleoclimate, at various times throughout the 4.5 billion year history of the planet. But the importance of the Antarctic ice record is that it provides a continuous and fairly fine resolution record of climate cycles throughout the entire period of existence of our species, Homo sapiens, (originating approximately 200,000 years ago) and during the approximately half-million year prior period in which evolution gave rise to the human species derived from pre-human lineages.

In recent decades, global warming has been shown to be at least partially attributed to human-related activities (including deforestation, peatlands destruction, rice farming and fossil fuel combustion), dating primarily back approximately 250 years to the start of the industrial Revolution. During most of the period of the 800,000 year Antarctic ice record humans and immediate pre-human ancestors were present but exhibited minimal impact on global-wide processes affecting climate. Thus global change cycles that occurred when humans existed but were not influential on climate processes can now be compared to climate changes now occurring during a period of major influence of human activity to global climate processes; this period of considerable human influence can be generally viewed as the early to mid-Holocene, when broad scale deforestation, livestock keeping, widespread crop production and extensive forest burning began to alter atmospheric levels of methane and carbon dioxide.

There are two reasons why ancient ice can serve as an important source of climatological data. First, frozen ice from glaciers and from Antarctica does not only contain water but also tiny bubbles containing a sampling of ancient atmospheres. Second, molecules within the frozen ice provide atomic signals that serve as indicators of the global temperatures present when the water now in the ice originally fell from the sky as snow.

We tend to think of freshly fallen snow as being comprised mostly of water but in fact the density of snow may be one tenth that of water depending upon the amount of air contained within the snow. Ice cream is a man-made frozen substance with specific amounts of air purposefully incorporated to obtain desired consistency and texture. The amount of air incorporated into one's favorite ice cream can be seen by looking at the volume change of a melted bowl of ice cream.

As years, decades, centuries, and millenia of snowfall events are laid down in a very cold place like Antarctica, the fresh snow is gradually compressed into layers of ice. Some of the air that came with the originally freshly fallen snowfall events is retained in the column of ice as minute bubbles. The ice acts as a "time-machine", allowing scientists to sample the concentrations of greenhouse gas present in ancient air dating back more than three-quarters of a million years.

Two factors contribute to allow atoms within the water molecules of Antarctic ice to serve as paleothermometers of past climate periods. First, not all water molecules

are the same. While all molecules of water are composed of atoms of hydrogen and oxygen, a small but significant number of water molecules contain a "heavy" form of hydrogen called deuterium. The deuterium isotope is twice as heavy as the more common hydrogen isotope. Thus deuterated water molecules are quite a bit heavier water molecules than lighter hydrogen isotope.

Deuterium is twice as heavy as the more common hydrogen isotope.

Second, all water on Earth passes through what is known as the hydrologic cycle, in which water molecules are converted between solid, liquid, and vapor forms through physical processes including freezing, melting, evaporation, and sublimation and moved through various locations in the biosphere through physical (e.g. wind patterns, ocean circulation, and streamflow) and biological (plant root uptake and transpiration) processes. The movement of water through the hydrologic cycle is temperature dependent. As liquid water is heated, the rate of evaporation is increased.

But an elevated evaporation rate is not the only change that occurs in heated water. As the water is heated, the lighter molecules containing the common hydrogen isotope will evaporate more quickly than heavier molecules containing deuterium. Water vapor formed under higher temperatures will have less deuterium than water vapor formed under lower temperatures. This process is called deuterium fractionation. Not only does the fractionation process work at the scale of water boiling in a pot, it also works at the scale of the global hydrologic cycle. Therefore, in warmer years, water vapor and cloud water will tend to contain lower concentrations of the heavier isotope deuterium that concentrations found in cooler years. In warmer years water and cloud vapor moving over Antarctica as well as the snow derived therefrom will tend to have lower concentrations of deuterium that that of cooler years. As Antarctic snowfall events are converted to layers of ice, the relative concentrations of deuterium in each layer of ice reflect the relative global temperatures of the years in which the original snow accumulated. Thus the relative concentrations of hydrogen and deuterium isotopes (called Delta-D or δ-D) in each ice layer serve scientists as paleothermometers of the Earth's average global temperatures dating back hundreds of thousands of years.

Text 15.

Read the text, define the key words and write abstracts both in English and Ukrainian.

Urbanization and Global Change

The human population has lived a rural lifestyle through most of history. The world’s population, however, is quickly becoming urbanized as people migrate to the cities. In 1950, less than 30% of the world’s population lived in cities. This number grew to 47% in the year 2000 (2.8 billion people), and it is expected to grow to 60% by the year 2025.

Developed nations have a higher percentage of urban residents than less developed countries. The definition of an urban area changes from country to country. In general, there are no standards, and each country develops its own set of criteria for

distinguishing cities or urban areas. A city is generally defined as a political unit, i.e., a place organized and governed by an administrative body. A way of defining a city or an urban area is by the number of residents. The United Nations defines settlements of over 20,000 as urban, and those with more than 100,000 as cities. The United States defines an urbanized area as a city and surrounding area, with a minimum population of 50,000. A metropolitan area includes both urban areas and rural areas that are socially and economically integrated with a particular city. Cities with over 5 million inhabitants are known as megacities. There were 41 in the year 2000. This number is expected to grow as the population increases in the next few decades.

The rapid growth of urban areas is the result of two factors: natural increase in population (excess of births over deaths), and migration to urban areas. Migration is defined as the long-term relocation of an individual, household or group to a new location outside the community of origin. Today the movement of people from rural to urban areas (internal migration) is most significant. Although smaller than the movement of people within borders, international migration is also increasing. Migration is often explained in terms of either "push factors" – conditions in the place of origin which are perceived by migrants as detrimental to their well-being or economic security, and "pull factors" – the circumstances in new places that attract individuals to move there. Examples of push factors include high unemployment and political persecution; examples of pull factors include job opportunities or moving to a better climate. .

International migration includes labor migration, refugees and undocumented migrants. Similar to rural-to-urban migration, individuals move in search of jobs and a better life. Income disparities among regions, and job opportunities, are key motivating factors. The migration policies of sending and receiving countries also play a key role. The best current estimate from the United Nations Population Fund indicates that more than 100 million people were living outside their countries of birth or citizenship in 1998. There are a number of reasons why this figure is rising, but an important one is that the native labor pool in the industrialized countries is shrinking, while the developing world's workforce is rapidly increasing.

Text 16

Read the text, define the key words and write abstracts both in English and Ukrainian.

Soil science

Soil science is the study of soil as a natural resource on the surface of the earth including soil formation, classification and mapping; physical, chemical, biological, and fertility properties of soils; and these properties in relation to the use and management of soils.

Sometimes terms which refer to branches of soil science, such as pedology (formation, chemistry, morphology and classification of soil) and edaphology (influence of soil on organisms, especially plants), are used as if synonymous with soil science. The diversity of names associated with this discipline is related to the various associations concerned. Indeed, engineers, agronomists, chemists, geologists, physical geographers, ecologists, biologists, microbiologists, sylviculturists, sanitarians, archaeologists, and specialists in regional planning, all contribute to further knowledge of soils and the advancement of the soil sciences. Soil scientists have raised concerns about how to preserve soil and arable land in a world with a growing population, possible future water crisis, increasing per capita food consumption, and land degradation.

Soil occupies the pedosphere, one of Earth's spheres that the geosciences use to organize the Earth conceptually. This is the conceptual perspective of pedology and edaphology, the two main branches of soil science. Pedology is the study of soil in its natural setting. Edaphology is the study of soil in relation to soil-dependent uses. Both branches apply a combination of soil physics, soil chemistry, and soil biology. Due to the numerous interactions between the biosphere, atmosphere and hydrosphere that are hosted within the pedosphere, more integrated, less soil-centric concepts are also valuable. Many concepts essential to understanding soil come from individuals not identifiable strictly as soil scientists. This highlights the interdisciplinary nature of soil concepts.

Dependence on and curiosity about soil, exploring the diversity and dynamic of this resource continues to yield fresh discoveries and insights. New avenues of soil research are compelled by a need to understand soil in the context of climate change, greenhouse gases, and carbon sequestration. Interest in maintaining the planet's biodiversity and in exploring past cultures has also stimulated renewed interest in achieving a more refined understanding of soil.

Most empirical knowledge of soil in nature comes from soil survey efforts. Soil survey, or soil mapping, is the process of determining the soil types or other properties of the soil cover over a landscape, and mapping them for others to understand and use. It relies heavily on distinguishing the individual influences of the five classic soil forming factors. This effort draws upon geomorphology, physical geography, and analysis of vegetation and land-use patterns. Primary data for the soil survey are acquired by field sampling and supported by remote sensing.

Vasily Dokuchaev, a Russian geologist, geographer and early soil scientist, is credited with identifying soil as a resource whose distinctness and complexity deserved to be separated conceptually from geology and crop production and treated as a whole. Previously, soil had been considered a product of chemical transformations of rocks, a dead substrate from which plants derive nutritious elements. Soil and bedrock were in fact equated. Dokuchaev considers the soil as a natural body having its own genesis and its own history of development, a body with complex and multiform processes taking place within it. The soil is considered as different from bedrock. The latter becomes soil under the influence of a series of

soil-formation factors (climate, vegetation, country, relief and age). According to him, soil should be called the "daily" or outward horizons of rocks regardless of the type; they are changed naturally by the common effect of water, air and various kinds of living and dead organisms.
A 1914 encyclopedic definition: "the different forms of earth on the surface of the rocks, formed by the breaking down or weathering of rocks" serves to illustrate the historic view of soil which persisted from the 19th century. Dokuchaev's late 19th century soil concept developed in the 20th century to one of soil as earthy material that has been altered by living processes. A corollary concept is that soil without a living component is simply a part of earth's outer layer.
Further refinement of the soil concept is occurring in view of an appreciation of energy transport and transformation within soil. The term is popularly applied to the material on the surface of the Earth's moon and Mars, a usage acceptable within a portion of the scientific community. Accurate to this modern understanding of soil is Nikiforoff's 1959 definition of soil as the "excited skin of the sub aerial part of the earth's crust".
Academically, soil scientists tend to be drawn to one of five areas of specialization: microbiology, pedology, edaphology, physics or chemistry. Yet the work specifics are very much dictated by the challenges facing our civilization's desire to sustain the land that supports it, and the distinctions between the sub-disciplines of soil science often blur in the process. Soil science professionals commonly stay current in soil chemistry, soil physics, soil microbiology, pedology, and applied soil science in related disciplines
One interesting effort drawing in soil scientists in the USA as of 2004 is the Soil Quality Initiative. Central to the Soil Quality Initiative is developing indices of soil health and then monitoring them in a way that gives us long term (decade-to-decade) feedback on our performance as stewards of the planet. The effort includes understanding the functions of soil microbiotic crusts and exploring the potential to sequester atmospheric carbon in soil organic matter. The concept of soil quality, however, has not been without its share of controversy and criticism, including critiques by Nobel Laureate Norman Borlaug and World Food Prize Winner Pedro Sanchez.
A more traditional role for soil scientists has been to map soils. Almost every area in the United States now has a published soil survey, which includes interpretive tables as to how soil properties support or limit activities and uses. An internationally accepted soil taxonomy allows uniform communication of soil characteristics and functions. National and international soil survey efforts have given the profession unique insights into landscape scale functions.

Apendix I.

Таблиця хімічних елементів, які використовуються в науковій літературі

Ar	argon	Аргон
Ac	actinium	Актиній
Ag	Silver	Срібло
Al	aluminium	Алюміній
An	actinon	Актинон
As	arsenic	Миш’як
At	astatine	Астатин
Au	gold	Золото
B	boron	Бор
Ba	barium	Барій
Be	beryllium	Берилій
Bi	bismuth	Вісмут
Bk	berkelium	Берклій
Br	bromine	Бром
C	carbon	Вуглець
Ca	calcium	Кальцій
Cd	cadmium	Кадмій
Cl	chlorine	Хлор
Cm	curium	Кюрій
Co	cobalt	Кобальт
Cr	chromium	Хром
Cu	copper	Мідь
F	fluorine	Фтор
Fe	iron	Залізо
H	hydrogen	Водень
He	helium	Гелій
Hg	mercury	Ртуть
I	iodine	Йод
In	indium	Індій
K	potassium	Калій
Li	lithium	Літій
Mg	magnesium	Магній
Mn	manganese	Марганець
N	nitrogen	Азот
Na	sodium	Натрій
Ni	nickel	Нікель
O	oxygen	Кисень
P	phosphorus	Фосфор
Pb	lead	Свинець
Pt	platinum	Платина

Pu	plutonium	Плутоній
S	sulphur	Сірка
Sb	antimony	Сурма / Стибій
Si	silicon	Кремній
Sn	tin	Олово
Sr	strontium	Стронцій
Ta	tantalum	Тантал
Ti	titanium	Титан
U	uranium	Уран
V	vanadium	Ванадій
Wn	tungsten	Вольфрам
Zn	zinc	Цинк

Apendix II.

Numerals – Числівник

One	first	один	перший
Two	second	два	другий
Three	third	три	третій
Four	fourth	чотири	четвертий
Five	fifth	п’ять	п’ятий
Six	sixth	шість	шостий
Seven	seventh	сім	сьомий
Eight	eighth	вісім	восьмий
Nine	ninth	дев’ять	дев’ятий
Ten	tenth	десять	десятий
Eleven	eleventh	одинадцять	одинадцятий
Twelve	twelfth	дванадцять	дванадцятий
Thirteen	thirteenth	тринадцять	тринадцятий
Fourteen	fourteenth	чотирнадцять	чотирнадцятий
Fifteen	fifteenth	п’ятнадцять	п’ятнадцятий
Sixteen	sixteenth	шістнадцять	шістнадцятий
Seventeen	seventeenth	сімнадцять	сімнадцятий
Eighteen	eighteenth	вісімнадцять	вісімнадцятий
Nineteen	nineteenth	дев’ятнадцять	дев’ятнадцятий
Twenty	twentieth	двадцять	двадцятий
Twenty one	twenty first	двадцять один	двадцять перший
Twenty two	twenty second	двадцять два	двадцять другий
Thirty	thirtieth	тридцять	тридцятий
Forty	fortieth	сорок	сороковий
Fifty	fiftieth	п’ятьдесят	п’ятидесятий
Sixty	sixtieth	шістдесят	шестидесятий
Seventy	seventieth	сімдесят	семидесятий
Eighty	eightieth	вісемдесят	восьмидесятий
Ninety	ninetieth	дев’яносто	дев’яностий
One hundred		сто	
Six hundred		шістьсот	

One thousand	тисяча
Six thousand	шість тисяч
One million	мільйон
Six million	шість мільйонів
One milliard (billion – am.)	мільярд
Six milliard	шість мільярдів

Порядок читання цифрових сполучень

3 – three
13 – thirteen
30 – thirty
33 – thirty three
333 – three hundred and thirty three
333,333 – three hundred and thirty three thousand, three hundred and thirty three
333,333,333 – three hundred and thirty three million, three hundred and thirty three thousand, three hundred and thirty three
123,456,789 – 1h and 23m 4h and 56th. 7h and 89 – one hundred and twenty three million four hundred and fifty six thousand seven hundred and eighty nine.
1 % one percent – один відсоток
20 % twenty percent – двадцять відсотків

Fractional Numerals – Дробові числівники
Common Fractions – Звичайні дроби

½ a half; one half
1/3 a third; one third
1/10 a tenth; one tenth
1/25 a (one) twenty fifth
¼ 1) a quarter; one quarter
2) a fourth; one fourth
1/5 a fifth; one fifth
¾ 1) three fourths
2) three quarters

5/16 five sixteenths
9/10 nine-tenths
26/38 twenty six thirty-eighths
79/100 seventy-nine hundredths
1/100 a (one) hundredth
1/1000 a (one) thousandth
125/1000 a (one) hundred and twenty-five thousandths
2 ½ two and a half
3 1/3 three and a third
135 ¾ a (one) hundred and thirty-five and three fourths (three quarters)

Decimal Fractions – Десятичні дроби

0.2 1) 0 point two
2) nought point two
3) zero point two
4) point two

0.02 1) o point o two
2)nought point nought two
3) zero point zero two
4) point nought two
5) point zero two

0.002 1) o point o two
2) nought point nought nought two
3) zero point zero zero two
4)point nought nought two
5) point two oes two

0.75 1) nought point seventy-five
2) point seven five

1.1 one point one
1.25 one point two five

63.57 1) sixty-three point five seven

2) six three point five seven

12.707 1) twelve point seven nought seven
2) one two point seven nought seven

***

2x3=6 – twice three is (makes) six
3x4=12 – three times four are twelve
7+8=15 – seven and (plus) eight are (make) fifteen
10-3=7 – ten less (minus) three is seven
20:5=4 – twenty divided by five is (makes) four

Apendix III.

Стійкі англо-українські словосполучення наукової мови

A

above:	
above all	перш за все
accord:	
in accord with	згідно з
accordingly	
account:	
of no account	незначний
on account of	в результаті
on no account	ні в якому разі
on one’s	самостійно
account	ось чому
on this account	не брати до уваги
	враховувати
to leave (put) out of account	враховувати
to take account of	
to take into account	урешті-решт
after:	
after all	через деякий час
	методом
after a while	значно пізніше
after the fashion	
well after	весь час
all:	узагалі
all along	усі крім
all in all	усюди, навкруги
all but	тим більше
all over	протягом
all the more	перш за все
all through	
first of all	весь час
along:	разом
all along	разом з тим

along with	у цілому
alongside	
altogether	і так далі
and:	
and so on	якщо взагалі
any:	так чи інакше
in any (anything)	узагалі
anyhow	
anyway	такий як
as:	у порівнянні з
as…as	на відміну від
as against	відносно
as distinct from	ще
as far as…is concerned	відносно
as far back as	фактично
as for	нібито
as good as	фактично
as if, as though	нерідко
as it is, as it does	як тільки
as often as not	а також
as soon as	ще
as well as	
as yet	узагалі
at:	у всякому випадку
at all	у всякому випадку
at all events	у кращому випадку
at any rate	детально
at best	найбільше
at large	відразу
at most	за один раз
at once	деколи
at a time	
at times	

B

behalf:	
in behalf	заради

on behalf	за дорученням
best:	
at best	у кращому випадку
best value	оптимальна величина
to the best of our knowledge	наскільки нам відомо
to do one’s best	робити все можливе
both:	
both…and…	як…так…
by:	
by and large	узагалі
by degree	поступово
by then	значно
by virtue of	дякуючи
by way	з допомогою
for and by	узагалі кажучи

C

case:	
the case is	річ у тім, що
as the case may be	за обставинами
in case	у випадку
in any case	у всякому випадку
in no case	ні в якому разі
this is far from being the case	справа зовсім не в цьому
certain:	
for certain	упевнено
to make certain	упевнитись
come:	
to come into being	виникати
to come into force	набувати чинності
comparison:	
in comparison with	у порівнянні з
beyond comparison	поза порівнянням
conclusion:	
to bring to a conclusion	закінчувати
to arrive at a conclusion	зробити висновки
to reach a conclusion	дійти висновку

consequence:	
as a consequence	у результаті
consideration:	
on no consideration	неістотний
to take into consideration	взяти до уваги
contrary:	
contrary to	на противагу
contrast:	
by contrast to (with)	у порівнянні з
course:	
in due course	коли треба
during the course of	протягом

D

due:	
due to	як результат
to be due to	бути обумовленим

E

end:	
at the end of	у кінці чогось
in the end	урешті-решт
to this end	
with this end in view	маючи на увазі
event:	
at all events	у всякому випадку
in any event	урешті-решт
ever:	
ever since	з тих пір
ever so if ever	якщо це взагалі (сталося)
hardly ever	рідко
extent:	
to the extent of	до, в межах
to a certain extent	певною мірою
to such an extent	настільки

F

fact:	
the fact is	срава в тому, що
in fact	насправді
far:	
far and away	без сумніву
far reaching	багатообіцяючий
as far as it goes	відносно
by far	значно
so far	до цього часу
this is far from	це зовсім не так
for:	
for a while	на деякий час
for good	назавжди
for lack of	у зв’язку з відсутністю
for one thing	по-перше
for the first time	уперше
for the sake	заради
for the time being	покищо
for want of	за відсутності

G

general:	
in general	узагалі, звичайно
generally:	
generally speaking	узагалі кажучи
give:	
to give credit for	віддати належне
given that	за умов

H

hence	отже
henceforth	на майбутнє, із цього часу
hereafter	потім
hereat	далі
herein	таким чином
hereinafter	у цьому, до цього

hereof	далі
hereon	відносно цього
hereout	на цій основі
hereto	до цього, попередній
heretofore	попередній
hereunder	до цього часу
hereunto	під цим
hereupon	до цього часу
herewith	вслід за цим
howsoever	нібито

I

if any	якщо взагалі
if ever	з погляду на
inasmuch	висновок
to draw an inference	робити висновки
insomuch	настільки, що

K

keep:	
to keep in mind	враховувати
to keep in touch	підтримувати зв’язок
to keep pace with	не відставати
to keep with	відповідно до

L

lack	відсутність
for lack of	за відсутності
not in the least	зовсім
to say the least	найменшою мірою
length:	
at length	принаймні
lest	щоби …не
let alone	не кажучи про
long:	
long before	задовго до
as long as	поки, відносно

in the long run	урешті-решт
long-term	довгостроковий

M

matter:	
a matter of dispute	предмет суперечок
form and matter	форма та зміст
as a matter of fact	фактично
as a matter of record	на основі отриманих даних
no matter how	немає значення, як
it does not matter	це не має значення
means:	
by any means	неодмінно
by means of	з допомогою
by no means	ні в якому разі
by some means or other	так чи інакше
more:	
more often than not	нерідко
more than once	неодноразово
the more so	тим більше, що
much more likely	вірогідно
it is more than enough	більш ніж потрібно
once more	ще раз
more or less	більш-менш
all the more so,as	тим більше, чим
moreover	крім того

much:	
much of	значно
as much as	стільки ж
much the same	майже так
in as much as	тому що
so much for	це все, що стосується

N

no longer	більше не
no matter	неважливо

notwithstanding	не дивлячись на
now and again	тепер
now and then	час від часу
from now on	у подальшому
up to now	до цього часу

O

once again	ще раз
onwards	уперед
onwards or else	або
order:	
in order to	для того щоб
over and above	крім того
over and over	багато разів, повторно
well over	значно вище (більше)

P

par	рівність
on a par with	поряд з
par excellence	переважно
part:	
part and parcel	невід’ємна частина
per	в, на, за
per sem	сам по собі
point:	
the point is	справа в тім, що
at all points	відносно всього
in point	той, що розглядається
in point of	відносно
in point of fact	насправді
off the point	не по суті
to the point	по суті
prima facie	на перший погляд
pro et contra	за і проти
pro forma	проформа, для виду
pro rata	пропорційно

R

rather:	
rather than	замість того, не раніше ніж
reason:	
by reason of	услід
for reason given	на цій основі
regard:	
as regards	відносно
with due regard for	враховуючи
resort:	
in the last resort	як останній засіб
respect:	
in respect of	відносно
with respect to	відносно
in no respect	ні в якому разі

S

sake:	
for the sake of	заради
same:	
the same as	таким же чином
just the same	такий самий
set:	
set forth	викласти
set forward	висунути
set to	приступати
so:	
and so forth	наскільки
and so on	і так далі

T

take:	
to take into account	враховувати
to take for granted	скористатись
thereafter	з того часу
thereabouts	поблизу
thereby	тим самим

thereagainst	на противагу
thereanent	відносно
thereat	там, в той час
therefore	тому що
thereupon	за тим
therein	там
thereof	із цього
thereover	відносно
therethrough	таким чином
thereto	крім того
theretofore	до того, до цього часу
thereunder	нижче
therewith	разом з тим
through:	
through and through	досконально
time:	
time and again	часто
from time to time	час від часу
this time	на цей раз

V

via	через
in view of	з погляду на

W

way:	
in one way or another	так чи інакше
in this way	таким чином
the other way round	навпаки
whatever	будь-який
whenever	усякий раз, коли
whereas	тоді як
wherefore	чому? з якої причини?
wherein	у чому?
whereupon	після чого, тоді
whosoever	чий би не
whoever	як би не, котрий би не

Apendix IV.

Українсько-англійський словник екологічних термінів

А

агент	agent
аерація	aeration
аерозоль	aerosol
аеростат	balloon
адаптація	adaptation
азот	nitrogen
акустика	acoustics
алергія	allergy
алерген	allergen
альбедо	albedo
антарктичний	antarctic
арктичний	arctic

Б

бавовна	cotton
басейн	basin
бджола	bee
бідний	poor
біомаса	biomass
білок	protein
біосфера	biosphere
біоценоз	

(угрупування організмів)	biocenosis
блискавка	lightening
болото	bog, marsh
боротьба за існування	competition
брак	failure
будувати	erect
бульбашка	bubble

В

вага	weight
важкий	heavy
вантаж	load
вантажити	to load
вапняк	limestone
вартість	cost
величезний	huge
весь, цілий	entire
відбір	selection
відкіс	grade
відносини	relationship
відходи	wastes
внесок	contribution
вибух	explosion
вид	species
виникати	arise
вимоги екологічні	environmental challenges
витрати води	intensity of flow

височина	highland
випар	evaporation
випас	grazing
викопне паливо	fossil fuel
випадання радіоактивних осадів	fallout
випадок	case
вир	vortex
вирва	funnel
вияв	manifestation
випуск	exhaust
виверження	eruption
викид	emission
вирубка лісів	deforestation
вимирання	extinction
викорінювати	eradicate
видаляти	expose (of)
викликати	cause
винаходити	invent
виснажувати	exhaust
впливати	influence
вододіл	watershed
водоймище	reservoir,basin
водоспад	waterfall
вологість	moisture
водорості	algae
водозабезпечення	water availability
вражати	affect
врожай	crop

вуглець	carbon

Г

газ	gas
газовий	gaseous
галузь	branch
гарні природні умови	environmental benefits
генетика	genetics
генотип	genotype
геосфера	geosphere
гербіцид	herbicide
генетично видозмінений	genetically modified
гирло	branch
гірник	miner
глибина	depth
глинозем	alumina
глибоководний	abyssal
гниття	decomposition
голод	famine
горіння	combustion
горизонт	level
гравітація	gravity
грунт	ground, soil
грунтова вода	ground water
гумус	humus

Д

дамба	dam
дані	data
дах	roof
двоокис вуглецю	carbon dioxide
джунглі	jungles
дія	effect
дефоліація	defoliation
дим	fume
димар	chimney
дихати	breathe
дихання	breath
дифузія	diffusion
дичина	game
діамант	diamond
діяльність	activity
добовий	diurnal
добрива	fertilizers
дозволити (собі)	to afford
домішка	admixture, additive
докази	proofs
доза	dosage
досвід	experience
досліджувати	to investigate
дощ	rainfall
древній	ancient
дренаж	drainage
дюна	dune

Е

екосистема	ecosystem
екологія	ecology
ерозія	erosion
евапотранспірація	evapotranspiration

Ж

жахливий	horrible
жебрак	beggar
живлення	nourishment
житло	accomodation
життя	life
жителі	inhabitants

З

заборона	ban
забруднення	pollution
забруднювати	to pollute
завершальний	final
законодавство	legislation
залучати	to involve
залізо	iron
запас	stock
запах	odor

заражати	to contaminate
засуха	drought
затоплення	water logging
захист	protection
збільшувати	to increase
згорання	combustion
звалище	dump
здатність	capacity
здатність (продуктивна землі)	land capacity
зіткнутися	to face
земля	earth
землетрус	earthquake
злидні	destitution
зливати	to discharge
зменшувати	to decrease, to reduce
зменшення запасів підземних вод	groundwater decrement
знесолення	desalting
зникати	to disappear
знищення	destruction
знищувати	to eliminate
зона	belt
з’являтися	to appear

I

ідилія	ideal
ізольований	isolated
імла	mist

іній	white frost
інцидент	incident
інженерні засоби і методи	engineering
інсектицид	insecticide
інсоляція (вплив сонця)	insolation
існування	existence
істота	living being
іржа	rust
інтенсивна експлуатація	pressure

Ї

їзда	drive, ride
їжа, поживні речовини	nutrient
їдкий	acrid
їстівний	edible

К

кадастр погіршення середовища	deterioration cadastre
канал	canal
каталітичне згорання	catalytic combustion
карст	karst
кар’єр	quarry
кедр	cedar
кіпоть	soot
кисень	oxygen
кислота	acid

кислотність	acidity
кондиціонер (добрив)	amendment
кора землі	crust
колектор	header
корінний (житель)	indigenous
комунальна служба	utility
колодязь	well
криза	crisis
криголам	icebreaker
кристал	crystal
кругообіг	circulation
кущ	bush

Л

лава	lava
лавина	avalanche
ландшафт	landscape
левада	meadow
ліс	woodland
лісонасадження	afforestation
лід	ice
льодовик	glacier
людство	humanity

М

материк	mainland

материкова частина суші	inland
маяк	beacon
меліорація	reclamation, amelioration
метан	methane
міграція	journey
міська агломерація	aggregation
міський	urban
мисливець-збирач	hunter-gatherer
миючий засіб	detergent
моніторинг, контроль	monitoring
мутація	mutation

Н

навколишнє середовище	environment
навколишнє повітря	ambient air
навмисно	deliberately
наноси	load
насиченість	saturation
наслідки	consequences
нафта	oil
наука	science
негативні наслідки	backlash
нераціональне використання ресурсів навколишнього середовища	environmental abuse
небезпека	hazard
неповноцінне харчування	malnutrition
ніша	niche

норма	standard

О

обрій	horizon
обмілина	bar
обмежувати	restrict
обмін речовин	metabolism
овочі	vegetables
оголений	bare
однорідний	homogenous
озеро	lake
опалювати	to heat
опромінення	irradiation
опис	description
органічний ріст	accretion
орна земля	plowland
основна культура	staple crop
острів	island
отрута	poison
охорона природи	conservation
оцінка	assessment, estimate
очевидно	apparently
очищувач	cleaner
очистка	purification

П

паводок	flood
пальне	fuel
парниковий ефект	greenhouse effect
паразит	pest
пестициди	pesticides
переконувати	to persuade
переробка	recycling
піна	foam
підтримувати	to sustain
піщана обмілина	sand bar
плин, течія	current
побічний продукт	by-product
побутові відходи	garbage
поверхня	surface
поведінка	behaviour
повітряний потік	air flow
поглинаюча здатність	absorbing ability
поживні речовини	nutrients
позбуватися	to expose of
покрив	cover
полив	irrigation
попередник	predecessor
порох	dust
порода	rock
потреба	demand
пояснення	explanation
предок	ancestor
притулок	shelter

притока	affluent
приплив	tide
природознавство	natural science
прогноз	forecast
проба	specimen
простір	space
продуктивність	efficiency
пророкувати	to predict
проливати	to spill
просочуватись	to leak
процвітати	to thrive
пустир	barren
пустеля	desert

Р

район	area
реакція	reaction
ремонт	maintenance
ресурси	resources
реставрація	restoration
рештки	debris
різноманітний	diverse
різноманіття	diversity
рівновага	equilibrium
рідина	liquid
ріст	growth
річний	annual

розвиватись	to evolve
розкидати	to scatter
розлив нафти	oil spill
розповсюдження, розподіл	distribution
розрідження	dilution
розходження	divergence
розчин	solution
розчинність	solubility
родовище	deposit
рослина	plant
рослинність	vegetation
ропа	brine
руйнувати	to ruin
русло	bed, channel
ртуть	mercury
приручений	tame
рух	motion

С

санітарно-профілактичні мірроприємства	sanitary arrangements
сарана	locust
свердловина	well
свіжий	fresh
свідчення	evidence
середовище	medium
середовище проживання	habitat
сільськогосподарський	agricultural

скеля	rock
складний	sophisticated
скло	glass
слабкий, тендітний	fragile
смертність	mortality
сміттєзвалище	landfill
сміттєспалювальний завод	incinerator
сміття	litter
смола	tar
сонячне випромінювання	solar radiation
спалах захворювання	outbreak
спалювання	burning
співпраця	collaboration
споживач	consumer
споживання	consumption
сполука хімічна	chemical compound
спосіб	way
сприяти	encourage
сталий розвиток	sustainable development
стихійне лихо	disaster
стійкість до хімічного забруднення	chemoresistance
стічні води	sewage
стояча вода	backwater
сугорб	hill
суспільство	society

Т

такий, що піддається біохімічному розкладенню	biodegradable
тайфун	typhoon
тверді відходи	refuse
тепло	heat
теплообмінник	exchanger
токсичність	toxicity
торф	peat
тріщина	crack
тривожити	disturb
тунель	tunnel
трясовина	bog

У

увага	attention
уважний	attentive
угода	agreement
узбережжя	shore
узбіччя	edge
укриття	shelter
ультразвук	ultrasound
умова	condition
уникати	escape
упевнений	confident
управління	management
ураган	hurricane
урвище	precipice

уряд	government
успіх	success
установка для очищення вихлопних газів	antipollution device
устаткування	equipment
утворення	establishment
утрата	loss
ухил	inclination
уява	imagination

Ф

фактор	factor
фахівець	expert
фауна	fauna
фермент	enzyme
філія	branch
фільтр	filter
фільтруючий шар	filter blanket
фінансування	financing
флора	flora
фон	background
формувати	to form
фотознімання	survey
функціонувати	to function

Х

хазяїн	master, host

характерна ознака	attribute
хвиля	wave
хвороботворний	disease-producing
хвилювати, тривожити	alarm
хижак	predator
хист	ability
хмара	cloud
хлор	chlorine
хутро	fur

Ц

цвітіння води	algal bloom
цегла	brick
целюлоза	cellulose
цінність	value
цивільний	civil
цикл	cycle
циклон	cyclone

Ч

чагарник	scrubland
чавун	cast iron
чад	fume-filled air
чапля	heron
частина	part
частота	frequency

численний	numerous
човен	boat
чуття	feeling

Ш

шавлія	sage
шампіньйон	field mushroom
шанувати	to respect
шар	blanket, layer
шапка(полярна)	cap
шахтар	minor
швидкість	velocity
швидкісний	fast
шельфовий лід	ice barrier
шкіра	skin
шкода	damage, harm
шкодити	to harm
шкідливий	detrimental
шлак	cinder
шлюз	lock
шовк	silk
штовхати	to push
штучний	man-made, artificial
шукати	to look for
шум	noise

Щ

щезати	to disappear
щілина	slit
щільний	dense
щільність	density
щоденник	diary
щорічний	annual
щур	rat

Я

яблуко	apple
явище	phenomenon
якість	quality
якір	anchor
ялина	fir tree
яловичина	beef
ярий	spring
ярмарок	fair
ячмінь	barley
ящірка	lizard

Apendix V.

Неправильні дієслова, які вживаються найчастіше

1	2	3	перевод
	Всі три форми співпадають		
to cost	cost	cost	коштувати
to cut	cut	cut	різати
to hit	hit	hit	ударяти
to hurt	hurt	hurt	ушкодити
to knit	knit, knitted	knit, knitted	в'язати
to let	let	let	дозволяти
to put	put	put	класти
to set	set	set	поміщати
to shut	shut	shut	закривати
to split	split	split	розколювати(ся)
	Співпадають друга та третя форми		
to bend	bent	bent	гнути(ся)
to bind	bound	bound	зв’язувати
to bring	brought	brought	приносити
to build	built	built	будувати
to burn	burnt	burnt	горіти
to buy	bought	bought	купувати
to catch	caught	caught	ловити
to deal	dealt	dealt	мати справу
to dig	dug	dug	копати
to dream	dreamt, dreamed	dreamt, dreamed	мріяти
to feed	fed	fed	годувати(ся)
to fight	fought	fought	боротися
to find	found	found	знаходити
to hang	hung	hung	висіти
to have	had	had	мати
to hear	heard	heard	чути
to hold	held	held	тримати
to keep	kept	kept	зберігати

to lay	laid	laid	класти
to lead	led	led	вести
to learn	learnt	learnt	навчатися
to leave	left	left	залишати
to lose	lost	lost	губити
to make	made	made	робити, змушувати
to mean	meant	meant	значити
to meet	met	met	зустрічати
to pay	paid	paid	платити
to read [ri:d]	read [red]	read [red]	читати
to say	said	said	говорити
to sell	sold	sold	продавати
to send	sent	sent	посилати
to shine	shone	shone	світити
to shoot	shot	shot	стріляти
to sit	sat	sat	сидіти
to sleep	slept	slept	спати
to spend	spent	spent	витрачати
to stand	stood	stood	стояти
to sweep	swept	swept	мести
to teach	taught	taught	навчати
to tell	told	told	розповідати
to think	thought	thought	думати
to understand	understood	understood	розуміти
to weep	wept	wept	плакати
to win	won	won	вигравати

<u>Всі три форми не співпадають</u>

to be	was (were)	been	бути
to begin	began	begun	починати(ся)
to bite	bit	bitten	кусати
to blow	blew	blown	дути
to break	broke	broken	ламати
to choose	chose	chosen	вибирати
to do	did	done	робити

to drink	drank	drunk	пити
to drive	drove	driven	везти
to eat	ate	eaten	їсти
to fly	flew	flown	літати
to forget	forgot	forgotten	забувати
to forgive	forgave	forgiven	прощати
to give	gave	given	давати
to go	went	gone	іти
to grow	grew	grown	рости
to know	knew	known	знати
to ride	rode	ridden	їхати
to rise	rose	risen	підніматися
to see	saw	seen	бачити
to shake	shook	shaken	трясти
to sing	sang	sung	співати
to speak	spoke	spoken	говорити
to steal	stole	stolen	красти
to swim	swam	swum	плавати
to take	took	taken	брати
to throw	threw	thrown	кидати
to wake	woke, waked	woken, waked	будити
to write	wrote	written	писати

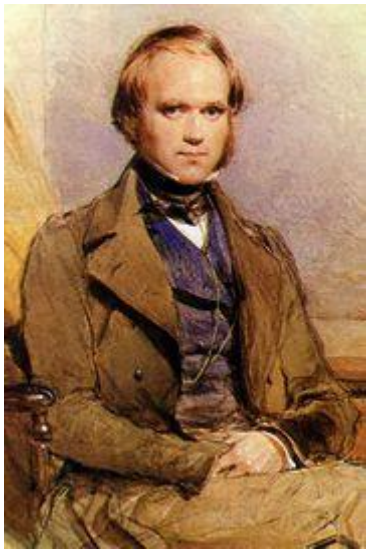
<u>Співпадають перша та третя форми</u>

to become	became	become	ставати
to come	came	come	приходити
to run	ran	run	бігти

Part IV.
Scientists
They contributed into the development of ecology.

Read the information about scientists, prepare reports about them and discuss.

Appearance of ecology as a science was preceded by the publication of a famous book by Charles Darwin *"*On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*"* on November 24, 1859. Since that time ecology has been developing as an independent science.



Charles Robert Darwin

Darwin, Charles Robert was a British naturalist who became famous for his theories of evolution. Like several other scientists before him, Darwin believed that, through millions of years all species of plants and animals had evolved (developed gradually) from a few common ancestors.

Darwin's theories included several related ideas. They were: (1) that evolution had occurred; (2) that most evolutionary change was gradual, requiring thousands or millions of years; (3) that the primary mechanism for evolution was a process called natural selection, and (4) that the millions of species present on earth today arose from a single original life form through a branching process called *speciation,* by which one species can give rise to two or more species. Darwin set forth

his theories in his book *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life* (1859).

Darwin's theories shocked most people of his day, who believed that each species had been created by a separate divine act. His book, which is usually called simply *The Origin of Species*, presented facts that refuted this belief. It caused a revolution in biological science and greatly affected religious thought.

Darwin wrote that each organism depended not only on conditions of location, but on all other living beings surrounding it. As a result of natural selection only the organisms which had undergone the changes advantageous for existence in the specified conditions, are preserved.

This way of thinking enabled Darwin's contemporary and the follower German scientist Ernest Gekkel to claim about practical separation of a new science about relationships between living organisms and their communities with each other and with the environment.

Charles Darwin's ideas about the struggle for survival not only as the struggle between organisms themselves, but also with non-living environment were the scientific foundations on which in 1866 E. Gekkel built the structure of the new science. In Russia a passionate champion and popularisor of the evolution theory by Ch. Darwin and the follower of E.Gekkel was K. A. Timiryazev.

Ernest Gekkel (1834-1919) – a German scientist, the follower of Ch.Darwin. In 1866 he formulated as a biogenetic law interrelations between individual development of a person (ontogenesis) and development of his/her predecessors (phylogenesis), established by Darwin. His most well-known works are "General morphology of

organisms” (1866), “Anthropogenics or the History of Development of Man” (1874), “World mysteries “(1899) and “Wonders of Life” (1904).

In 1866 he was the first to introduce the term “ecology” in scientific circulation, defining it as follows:

This is perception of nature’s economics, simultaneous investigation of all relationships of living things with organic and inorganic components of the environment, certainly including non-antagonistic and antagonistic relationships between contacting animals and plants. In short, ecology is a science which studies all complex interrelations and relationships in nature considered by Darwin as a condition of the struggle for existence.

Ecological approach to the study of nature, as is seen from the above-mentioned, has been incidental to man since the ancient times, but the word “ecology” did not exist. Gekkel’s merit is in the fact that he was the first to give the name to a new science and determine the subject of its research. Although ecology as an independent branch of biological sciences was specified as far as in late XIX century, its contents are extending continuously till the present day.

Naturalist Philosophers

The philosophy behind the environmental movement had its roots in the past century. Among many notable conservationist-philosophers, several stand out: Ralph Waldo Emerson, Henry David Thoreau, John Muir, Aldo Leopold, and Rachel Carson.

Ralph Waldo Emerson

In **Emerson's** first essay, *Nature*, published in 1836, he claimed that "behind nature, throughout nature, spirit is present." Emerson was an

early critic of rampant economic development, and he sought to correct what he considered to be the social and spiritual errors of his time. In his *Journals,* published in 1840, Emerson stated that "a question which well deserves examination now is the Dangers of Commerce. This invasion of Nature by Trade with its Money, its Credit, its Steam, its Railroads, threatens to upset the balance of Man and Nature."

Henry David Thoreau

A naturalist who held beliefs similar to Emerson's was **Henry David Thoreau.** Thoreau's bias fell on the side of "truth in nature and wilderness over the deceits of urban civilization." The countryside around Concord, Massachusetts, fascinated and exhilarated him as much as the commercialism of the city depressed him. It was near Concord that Thoreau wrote his classic, *Walden,* which described a year when he lived in the country to have direct contact with nature's "essential facts of Life." In his later works and journals, Thoreau summarized his feelings toward nature with prophetic vision:

“But most men, it seems to me, do not care for Nature and would sell their share in all its beauty, as long as they may live, for a stated sum—many for a glass of rum. Thank God, man cannot as yet fly, and lay waste the sky as well as the earth! We are safe on that side for the present. It is for the very reason that some do not care for these things that we need to continue to protect all from the vandalism of a few. (1861).”

John Muir

John Muir combined the intellectual ponderings of a philosopher with the hard-core, pragmatic characteristics of a leader. Muir believed that "wilderness mirrors divinity, nourishes humanity, and vivifies the spirit." Muir tried to convince people to leave the cities for a while to enjoy the wilderness. However, he felt that the wilderness was threatened. In the 1876 article entitled, "God's First Temples: How Shall We Preserve Our Forests," published in the Sacramento *Record Union*, Muir argued that only government control could save California's finest sequoia groves from the "ravages of fools." In the early 1890s, Muir organized the Sierra Club to "explore, enjoy, and render accessible the mountain regions of the Pacific Coast" and to enlist the support of the government in preserving these areas. His actions in the West convinced the federal government to restrict development in the Yosemite Valley, which preserved its beauty for generations to come.

Aldo Leopold

Another thinker as well as a doer in the early conservation field was **Aldo Leopold**. As a philosopher, Leopold summed up his feelings in A *Sand County Almanac:*

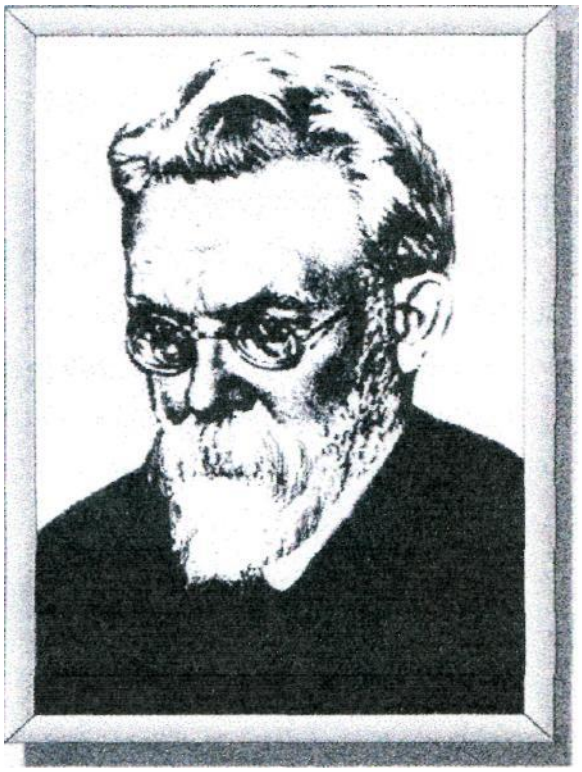
Wilderness is the raw material out of which man has hammered the artifact called civilization. No living man will see again the long grass prairie, where a sea of prairie flowers lapped at the stirrups of the pioneer. No living man will see again the virgin pineries of the Lake States, or the flatwoods of the coastal plain, or the giant hardwoods.

Leopold founded the field of game management. In the 1920s, while serving in the Forest Service, he worked for the development of a wilderness policy and pioneered his concepts of game management. He wrote extensively in the *Bulletin* of the American Game Association and stated that the amount of space and the type of forage of a wildlife habitat determine the number of animals that can be supported in an area. Furthermore, he said that regulated hunting can maintain a proper balance of wildlife.

Rachel Carson

While most people talk about what's wrong with the way things are, few actually go ahead and change it. **Rachel Carson** ranks among those few. A distinguished naturalist and best-selling nature writer, Rachel Carson published a series of articles in the New Yorker in 1960, which generated widespread discussion about pesticides. In 1962, she published *Silent Spring*, which dramatized the potential dangers of pesticides to food, wildlife, and humans and eventually led to changes in pesticide use in the United States.

Although some technical details of her book have been shown to be in error by later research, her basic thesis that pesticides can contaminate and cause widespread damage to the ecosystem has been established. Unfortunately, Carson's early death from cancer came before her book was recognized as one of the most important events in the history of environmental awareness and action in XX century.



Vladimir Ivanovich Vernadsky (1863-1945) – a great Russian scientist-mineralogist, crystallographer, geochemist, radiogeologist, creator of biochemistry and the study of biosphere.

Vernadsky's scientific interests were extremely wide. As a founder of geochemistry, he carried out his first research of laws of structure and composition of interacting elements and structures in the Earth's crust, hydrosphere and atmosphere. He also investigated migration of chemical elements in lithosphere and the role of radioactive elements in its evolution. In 1923 he formulated a theory of a leading role of living organisms in geochemical processes, in 1926 – a concept and definition of a biosphere and a living being; a study was created according to which a living thing involves inorganic matter into continuous circulation by transforming solar radiation, i.e. the central concept of biogeochemistry.

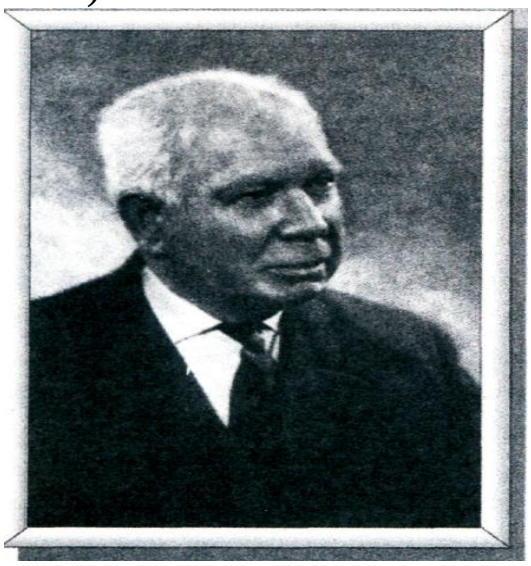
His main work is the book «Biosphere» published in 1926 and noticed by the scientific world because of the problem of cooperation between living organisms and non-living nature. In his studies of a biosphere he investigated not only basic properties of "living matter" and influence of properties "unsusceptible" to new ideas of nature on it, but also enormous reverse influence were examined on non-living nature and formation of natural bodies "unsusceptible" to new ideas (such as soils or lakes). V.I.Vernadsky showed the leading role of living organisms in accumulation of solar energy and transformation of matter which

composes the Earth's crust: "Essentially a biosphere can be regarded as a region of the earth's crust, transforming the space radiation into effective earth energy", – he wrote. "The living matter" does enormous" "geochemical" work, forming composition and structure of the earth. Clays, limestone, dolomites, iron ore, bauxite are all the rocks of organic origin.

A biosphere appeared to be a global system, functioning on dynamic unity and co-operation of components "biologically unsusceptible to new ideas" .

V.I.Vernadsky's study about a biosphere played an important role in raising integral perception of natural processes as systems.

Middle of XX century was marked by expansion of complex researches of ecosystem (V.I.Cormorants, Lyndeman, G. Odum, Yu. Vynberg., P. Margalef and many others).



In 1956 under the guidance of V.I. Zhadin a book "Life of fresh waters" was published. In 1961 a monograph "Rivers, lakes and storage pools of USSR" by the same authors was published. These works described the features of water ecosystems. In 1964 there was an attempt to synthesize the information about such a difficult dynamic system as forest biocenosis, mainly to expose its quantitative conformities to the law of functioning and evolution. A team of authors under the guidance of **V.N.Sukachev** published the book "Basis of forest biocenology".

M.M. Moiseyev was born in 1917, graduated from Moscow University (1941) and Air Force Engineering Academy (1942). For some time he taught in Moscow Higher Technical school, in Rostov University, in Moscow Institute of Physics and Technology. From 1961 he also worked in the Computer center of the Academy of Sciences of the USSR.

Mykyta (Nick) Moiseyev is the prominent Russian scientist, mathematician with the world name, actual member of Russian Academy of Sciences, specialist in the field of systems analysis, designs and prognostications. Researches of ecology of humanity through the eyes of mathematician allowed the scientist to cast new light on the antiecological costs of progress and prospects of interrelationship between man and nature.

In one of his interviews about the scientific direction he said:

"...I was completely fascinated by biosphere, as an integral system, its dynamics, universal evolution ".

He is the author of enthralling books, on which the whole generation of scientists grew .In 1977 he wrote about cybernetic description of the ecological-economic systems applying the informative theory of the hierarchical systems. He began to take interest in the problems of mathematical design of processes in a biosphere and discussed them with N.V. Tymofeyev –Resovsky. **Moiseyev** studied **V.I Vernadsky's** theory about noosphere and developed conception of co-evolution between man and nature. At that time works by G.Forrester and D. Medouz on a global dynamics were already well-known. Criticism of these works was the starting point of researches of **M.M. Moiseyev.** He developed the program the purpose of which was to create a system of models describing interprocess communication in a biosphere and human activity. At the first stage he built the model of interprocess communication in the atmosphere and in the ocean, which influenced on weather and climate. **Mykyta (Nick) Moiseyev** worked at this model together with his student V.V. Aleksandrov, who conducted numeral experiments with it.

Michael Jacob Lemeshev, doctor of economic sciences, professor. Expert of UNO on environment, chairman of Higher Ecological Council in the State Duma. From 1960th he worked at a new economic paradigm of development of the society. Socio-economic relations in territorial natural-economic complexes were the main object of his researches.

On the example of many regions of Russia and former Soviet Union he was the first to convincingly show anti-ecological and ineffective policy of placing productive forces into concrete natural complexes. Economic and ecological problems of integration and management were the main themes of his works. M.J.Lemeshev was among the first scientists who developed a concept of an ecological-economic system as the main object of management of natural resources. He criticized modern methods of use of natural resources .

Nick Feodor Reymers (1931–1993), Doctor of biological sciences, professor, was the prominent Russian biologist-environmentalist who made invaluable contribution to the development of theoretical bases of modern ecology. He worked at the top of natural science – mega-ecology, around which other scientific disciplines connected with humanity development and threat of ecological crisis are concentrated. N.F.Reymers was a remarkable classifier. He generalized most complete laws and principles of ecology; as a result of his activity on nature protection there was created the so-called Reymers pact which serves as the standard of scientific ground for practical actions.

Maurice Strong is the first Executive Director of YUNEP (General Assembly of UNO officially founded Program of UNO on environment ”YUNEP” in December, 1972 after the Stockholm conference on the problems of man’s environment). M. Strong was the Secretary-General of the Stockholm conference, where a concept of ecological development was formulated for the first time. He was one of the first experts who spoke about the necessity of human transition from purely economic system to ecological-economic one. In 1992 he was the Secretary-General of the World summit in Rio de Janeiro.

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